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COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

MARCH 1938 | "Don't Tolerate - Exterminate" | VOL. 6, NO. 3

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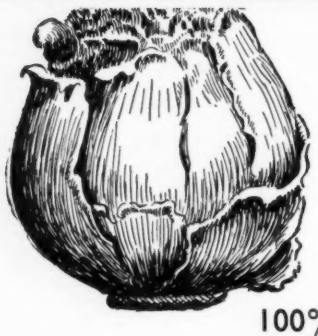

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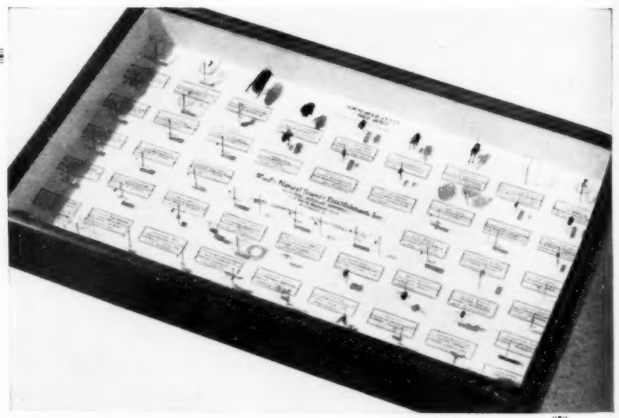

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EXTERMINATORS LOG

Monthly trade paper for the pest control industry, (exterminators, fumigators, termite control operators, moth proofers, and kindred activities), insecticide manufacturers, supply houses to the pest control industry and entomologists.

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128 Lexington Ave., New York City
Phone Buckminster 4-5029

Cooperating with the National Pest Control Association, Inc.

VOL. 6, NO. 3 | MARCH, 1938 | ESTABLISHED 1933

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The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

For further details, communicate with
WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

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Editorial

How to Judge Termite Control Service

IN THE February issue of The Log attention was called to the bulletin entitled "How to Judge Termite Control Service" that was prepared by the National Better Business Bureau. We condemn the subtle phraseology of this bulletin which by inference or otherwise builds up to the place where the following paragraph appears: "The **approved chemical method** of control undertakes to treat with chemical poisonous to termites, every point at which they might enter or leave the building; to create, in effect, a toxic shield through which termites cannot pass. In this process, all understructural wood members are impregnated with chemical at their bearing points on all supporting construction. The chemical is not simply sprayed upon the surface of the wood but injected into it at high pressure so as to form an impervious toxic band throughout. Pressure treatment of wall areas through which termites might pass, and saturation of the soil adjoining the structure with a view also to setting up a ground barrier, complete the process."

One really must read carefully the "build-up" that leads to the above paragraph to appreciate fully the significance because with qualifying words such as appear in portions of the remarks, there is given a proper picture of the sequence. Examples: "soil poisoning **alone;**" "by **merely** poisoning the soil." One would gather from these remarks that no other considerations are given as to soil treatments. In short, the bulletin would have the public assume that the "approved method" consists of what is mentioned in the previous paragraph but carefully refrains to say by whom such becomes the "approved method" and then winds up with "thorough and effective treatments call for the employment of honest and skilled operators, the use of **expensive equipment,** the application of **costly chemicals** and, often, the purchase and installation of other materials and additional labor." The bulletin is spoiled throughout by qualifying remarks —portions of sentences being good and then qualified.

When it comes to reference to **guarantee** the following phraseology appears: "The value of the guarantee will depend upon the honesty, financial resources and ability of the guarantor. If the guarantor is of good reputation and substantial means, or better still, if the fulfillment of his contract is guaranteed by a recognized surety or insurance company, **then and then only** may the owner feel that he is getting adequate protection."

One must read the entire bulletin and follow the sequence step by step to know that it becomes useless to change words here and there. Complete revamping is necessary in that even some of the entomological references to termites is incorrect.

The National Pest Control Association has rightfully protested this bulletin and The Log is informed that the National Better Business Bureau has directed a notice to those who have obtained copies of this bulletin that the present bulletin is not to be distributed nor is any use of the bulletin to be made for any purposes since there is to be issued a revised bulletin.

That a bulletin on Termite Control Service work would be appreciated in the interests of protecting the public goes without saying. The Termite Control Operators will not tolerate a bulletin such as was issued because of the confusion that it would make as well as carrying certain remarks which are not, in fact, the truth. The National Pest Control Association will act promptly upon advice of the use of this bulletin.

Termites and Debunking

WE ARE pleased to acknowledge a few comments that have come to us in connection with the article that appeared in the January issue of The Log, "Termites—High Time To Do Some More Debunking."

To the Editor of The Log:

"The article on termites and need of debunking appeals to us. In self defense our own company was forced to issue a bond with each contract, and this bond has also been changed to an insurance. But this bond or insurance is not given by the manufacturer of our chemical, but it is issued by the insurance company in the name of the customer as an added guarantee, that we fulfill our contract—a most unnecessary proceeding since the responsibility of our company is known all over the state."

* * *

To the Editor of The Log:

"How much for 1000 reprints of the article that appeared in the January issue of The Log on 'Termites, High Time To Do Some More Debunking?' Feel that this article should be further enlarged upon to show that all this 'free service' during the years to come and covered by the 'guarantee' is paid for by the public and PAYS IN ADVANCE."

* * *

Dear Mr. Cossetta:

"We know that any single firm could not proceed with doing what has been suggested in the article on termites that was printed in the January issue. Count us in as one firm which will do this very thing. This would be a real program for the National Pest Control Association to put into effect. Let's forget the past and take stock of ourselves. Let's stop thinking that we have to follow any individual firm; let's tell the public the truth. One single firm, having entered this 'bond trap' and trying to withdraw would be in the same position as a banana pulled out of the bunch—it gets skinned. High pressure sales tactics can be eliminated as soon as a fair number of firms decide to do the debunking. So why wait? Let's go."

* * *

To the Editor of The Log:

"The right kind of militant attitude was shown in the article that appeared in the January issue of The Log about termites and some debunking necessary. I know of operators who give five years bonded guarantee and they were not able to get a monthly credit at the gasoline station for themselves . . ."

Manufacturers and Supply Houses

The manufacturers and supply houses are to be commended for the splendid research work that is being continually done so that the concentrate and other proprietary products and chemicals are available, thus preventing the old "hit and miss" formula that some pest control operators still are trying to sell in a mysterious fashion as "something different." Hand in hand with this entomological and chemical research is the stability of prices so that pest control operators making purchases today are assured of fair dealing when it comes to prices and standards of products.

The closer relationship and confidence that is rapidly growing between the pest control operators and the insecticide and disinfectant manufacturers speaks well for the future of the industry.

Thank You, Dr. Elliott

THE LOG was pleased to receive a copy of the letter that Dr. Edward C. Elliott, President of Purdue University, Lafayette, Ind., sent to Dr. H. K. Steckel, President of the National Pest Control Association, shortly after the second successful Pest Control Operators' Conference which attracted 105 pest control operators from 22 states and Canada.

January 31, 1938.

Mr. H. K. Steckel, President
National Pest Control Association
113 West Rich Street
Columbus, Ohio

My Dear Mr. Steckel:

The memorandum on my desk indicates that there has been contributed by the members of the Pest Control Operators' Conference the sum of $150.00. This, added to the original $25.00 which was placed in my hands at the Conference dinner as a result of the "Exterminator" name contest, makes a fund of $175.00. This amount is now the capital of the Pest Control Operators' Student Loan Fund. Preference for the advantages of this fund will be given to students recommended by the Department of Entomology.

I am sure that you and all your associates in the important work you are doing realize the appreciation of the University, not alone for your interest in science, but also for this evidence of your belief in sensible sentiments. As I said at the dinner, unless there is a cataclysm in human affairs, the generosity of the Pest Control Operators will be effective for innumerable years to come.

Very sincerely yours,

EDWARD C. ELLIOTT,
President.

The interest shown by entomologists in our industry is highly appreciated and we cannot refrain from mentioning again the splendid work of Prof. J. J. Davis, his staff and other outstanding entomologists who assisted. Mr. Lee A. Strong, Chief of the Bureau of Entomology, Washington, D. C., regretted his inability to attend but gave his cooperation by having both Dr. E. A. Back and Dr. Thos. E. Snyder attend and take active part in the conference. Thanks to all.

W.P.A. Rat Campaigns in Cities Stop

THE NATIONAL Pest Control Association is to be congratulated on its presistent protests to the Works Progress Administration in connection with rat campaigns that have been conducted in several cities with possibly Chicago, Ill., being the outstanding city that received more money than any other city for such purpose. It is definitely conceded that the Works Progress Administration had before it a very serious task in providing various projects that would fit into a larger picture to make for the emergency that prevailed in the United States. On the other hand, there was involved in the case of the "rat campaigns" an abuse which not only injured materially our industry but with it a false conception of what rat control work really amounted to.

Our industry has added very little to unemployment; in fact, many firms realized the necessity of retaining employees even when there was not sufficient work and this mainly because men to do work properly must be carefully trained if there is to be competent and intelligent services. The public was most certainly given the false impression of rat work as it was being done by the WPA workers. Even when it comes to baiting, the WPA realized the limitations as to types of baits that could be used whereas the pest control industry must resort to several methods with its proper application of toxic substances or fumigations at times. It would have been folly to permit those being put to work by the WPA to engage in various kinds of baiting, let alone doing work in many properties that should be serviced by firms of our industry.

The United States Public Health Service has done an admirable job in bringing about the lack of plague hazard and other disease factors due to rats. In fact, there is no place in the United States considered in serious condition to allow for plague. On the other hand, there are local problems of "sanitation" that might well receive the attention of cities and if the emphasis were placed upon the cleaning up of such harborages, there would be less complaints about rats. Citizens would do well to impress upon their public officials the need of eliminating the sources of breeding. The Pest Control Industry is well able to cope with rat infestations and if the public would be made to have places treated where there are indications of rats, a useful service would be performed by city officials.

The Works Progress Administration, through Mr. J. C. Mehaffey, Executive Assistant to the Chief Engineer, recently wrote to the secretary of the National Pest Control Association, re-emphasizing that the entire responsibility for selecting the types of work to be performed with the assistance of the Works Progress Administration rests upon the sponsors of the projects. This would indicate again that local officials of different cities had been largely instrumental in presenting requests for such projects so that the problem for the most part rests largely with the cities themselves where these campaigns have been conducted. Mr. Mehaffey, however, ended the letter of January 25th with the following paragraph:

> "However, instructions have recently been received by this Administration that no further projects for rodent control in cities will be approved in Washington. Consequently, the project in Chicago will necessarily be discontinued upon the exhaustion of funds now authorized."

Our industry realizes that some of the WPA employees have set themselves up as "rat experts" and the industry would do well to show local officials that the public is not receiving a square deal if all that is being done is a continuance of the same type of work that has been reported from time to time as "expert rat control work."

Attention

We wrote to our National Secretary for the story about his recent trip so that we could publish it in the March issue of The Log. The following letter was received:

National Pest Control Association
A NON-PROFIT MEMBERSHIP ASSOCIATION
3019 FORT HAMILTON PARKWAY
(OFFICE OF SECRETARY)
BROOKLYN, NEW YORK

Mr. Al Cossetta,
512 East 14 St.,
Kansas City, Mo.

Dear Al:

Sorry indeed to disappoint you about the preparation of a summary of my recent trip but what I have to say will hold over until the April issue because I simply find it impossible to go over my notes and submit what should be said. Without a single word of exaggeration, there were sixteen inches of correspondence awaiting reply and it seemed to me that the important thing to do was to dig right in and answer the mail. Some of this correspondence calls for gathering of information and other facts, all of which mean a time factor.

Will surely send you the summary for your April issue.

Cordially yours,

WILLIAM O. BUETTNER,
Secretary.

The Termite Problem and Recent Research

By THOS. E. SNYDER, Senior Entomologist, Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, New Orleans, La.

Presented at the Annual Meeting of the National Pest Control Association, Memphis, Tenn., October 25-27, 1937.

INTRODUCTION

RECENT investigations have revealed that termites occur in every State in the Union, and three new species have been discovered—two in Florida and one in Kansas. It is now known that there are at least 58 different kinds of termites in the United States; another termite from Florida may be new. Not all of these termites are injurious to the woodwork of buildings, since some of them are not wood-boring in habit. Also, some of these termites occur only in uninhabited regions.

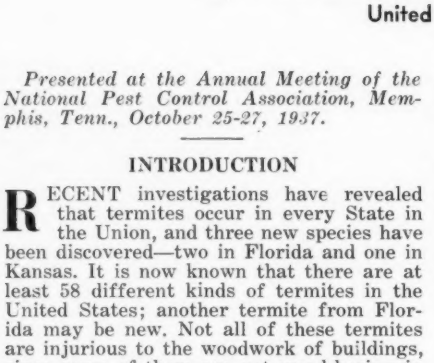

Fig. 1.—Map showing (by dots) the distribution of termite damage to buildings in the United States, from July, 1931, to July, 1936; the line shows the known northern limit of damage.

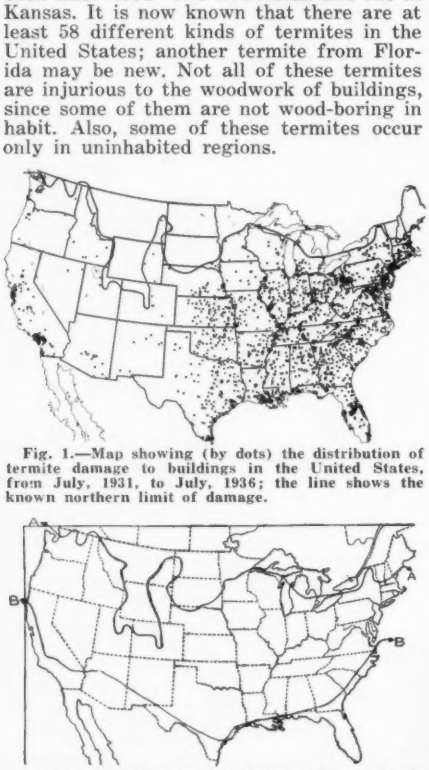

Fig. 2.—Map showing (line A-A) the known northern limit of damage by subterranean termites in the United States and (line B-B) the known northern limit of damage done by dry-wood or nonsubterranean termites. October, 1937.

There is no evidence that there is any natural spread of subterranean termites from one area of the country to another. This is the type which does the most serious structural damage and is most widely distributed in the United States. The known northern distribution of some subterranean termites has been extended (see Figs. 1 and 2), but this is the result of more thorough exploration by man and not of migration by termites.

In the case of one dry-wood termite (**Cryptotermes brevis Walker**), formerly known only from the Gulf States in this country, more northern occurrences have been discovered in Tennessee. This is a house termite and has never been found out of doors under natural conditions in this country. It infests the woodwork of buildings and furniture, especially the latter, and no doubt has been distributed north with infested furniture. Damage by this termite is of minor importance and is confined to areas near the coast. At New Orleans, La., less than 1 per cent of all buildings damaged by termites have been infested by dry-wood termites.

As early as 1932 pellets of excrement of a dry-wood termite, suspected to be a **Cryptotermes**, were found in furniture in a house in Ohio near the southern shores of Lake Erie (Elyria, Ohio). The wood was a species (red gum) not grown in commercial quantities in Ohio, and the termite-infested furniture may have been imported from the Southern States or manufactured from lumber shipped in from those States.

Cryptotermes brevis, a dry-wood termite of the West Indies and Central and South America, also occurs in the Gulf States, as previously stated, where it is more common in houses in the older Latin sections of cities; this is especially true of Tampa, Fla., and New Orleans, La. It may have been introduced into the United States or may be native. If introduced, this relatively unimportant termite is the only case where a termite found in the United States has not always been here. This termite was first found in the United States at Key West, Fla., in 1919, in furniture. These data tend to prove that there has been no natural spread of termites in the United States.

Termite Damage to Buildings and Control Measures

Naturally damage to buildings by termites is more common in the southern portions of the country. If houses are improperly built, termites may infest them. Very often, however, such injury is but slight and easily controlled. Many buildings in New Orleans, La., over 100 years old have, in some cases, no termite damage, in others little damage. The recent lowering of the water table and consequent settling and cracking of foundation walls has undoubtedly led to some increase during the past ten years.

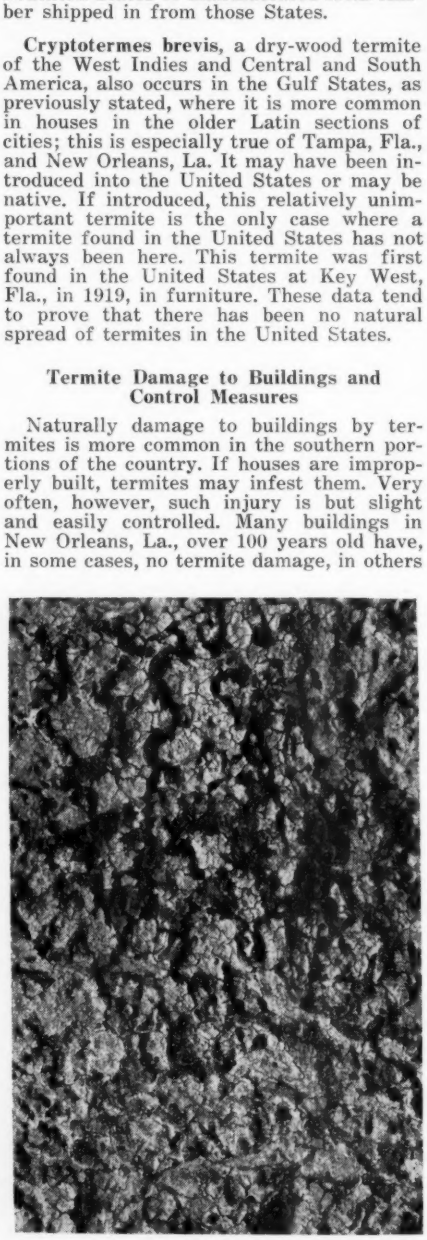

Fig. 3.—Cork insulation in a steel barge damaged by subterranean termites at New Orleans, La.

Fig. 4.—Emery paper damaged by subterranean termites in an infested building at New Orleans, La.

Without desire to minimize the damage which may be occasioned to buildings and contents (Figs. 3 and 4) from termite attack, especially if long continued, it should nevertheless be pointed out that, particularly in the more temperate zones, serious termite injury to buildings (involving structural weakening and safety) is relatively infrequent. Termite work may go on for years without involving the necessity for extensive repairs or reconstruction of foundation timbers and flooring. Often by periodic inspections of the foundations of buildings, breaking off the earthlike shelter tubes built by the termites, or a combination of such procedures and minor structural repairs, or the use of soil poisons about the foundations, termite attack can be easily and economically checked. The textile industry in the South is following such a plan on the advice of this Bureau, and in several cities commercial termite control operators derive revenue from such an inspection service at a reasonable yearly rate. Undoubtedly this is a good form of insurance to the property owner.

Termite control is frequently a matter of applied common sense. Subterranean termites, the common and injurious type, require moisture, which they obtain from the

earth, for their existence. When the connection between the building and the external soil moisture is broken, all the termites in the building promptly die and injury ceases. As to how this shall be done, methods vary tremendously, since many factors are involved—type of construction, cost, etc.

Careful and detailed inspections by entomologists from the office of the State entomologist indicate that by a combination of structural repairs and soil poisons, or chemical insulation, some termite control operators in Louisiana licensed by the State can obtain effective control in 80 to 90 per cent of the cases with the first application of the chemical; not extermination, since most operators do not treat any soil except around the foundation. The 20 to 10 per cent of the cases that are failures are not 100 per cent ineffective, since only one or two shelter tubes may be built by the termites over a large area previously infested. These partial failures may in reality be 90 per cent effective and can easily be mopped up by re-treating a small area at small cost; that is, by breaking off the new shelter tubes which may appear and by spot or localized soil treatments of reinfestation, control can be cheaply and effectively maintained.

Some structural repair work is necessary in practically all cases where commercial termite control operators contract to remedy termite damage to buildings. While the importance of making structural repairs that are necessary before applying soil treatments is recognized by the more efficient operators, sufficient emphasis is not placed on this phase of termite control when operators are soliciting contracts from the public. Certain firms will not issue their regular 2- or 3-year guarantee and will insist on a special contract when the house owner refuses to have necessary structural repairs made. In general, too much emphasis is placed on the chemical-insulation or soil-poisoning phase of control work, whereas it does not merit that much relative importance. It is true that often, but not always, at least in New Orleans, the structural repairs, while recommended by the termite control operator, are made by a contractor, mason, or carpenter not employed by his firm, and the cost is entirely separate.

Prices for termite control in New Orleans, by the more efficient operators, are as low as in any city concerning which I have records; "termiting" a six-room dwelling costs on the average $70 to $75. The office of the State entomologist shows some very promising results and progressive improvement in methods by certain operators during the period from 1934 to date. Careful case records are kept by some operators on form sheets which record essential details of location of damage, control work done, costs, etc.

Building Codes

The Federal Bureau of Entomology and Plant Quarantine believes that proper construction is the solution of the termite problem. For many years (since 1900) structural methods have been recommended as the only permanent means of preventing and remedying termite damage to the woodwork of buildings. Proper construction will prevent termite damage to new buildings, and this depends not so much on the type of building material as on the manner in which it is used. Any type of building material of good quality is suitable for termite-proof construction if the necessary precautions are followed out; i.e., if it is properly used. With the exception of the metal termite shield, these methods of construction normally should be included in any sound building program—without reference to termites.

Federal entomologists, since 1923, have recommended continuously that termite-proofing provisions should be included in the mandatory section of city building codes to protect the prospective owner from improper types of construction that might lead to termite damage. Such termite-proofing provisions have been adopted in part by some cities. The attainment of termite-proof buildings and the enforcement of such provisions is entirely a municipal problem, and the Federal Government can act only in an advisory capacity. It is possible that they are enforcible only in public buildings where the safety of large numbers of people is involved.

Essentially these provisions for insurance against termite attack to buildings pertain to methods of keeping subterranean termites from passing to and from the ground. The recommendations are, in general, as follows:

(1) No unprotected or untreated wood should be used in foundations, and basement or cellar floors should be of concrete. Untreated wood must be kept at least 18 inches above the earth unless the latter is covered with concrete, as in basements. A ground clearance of 18 inches or more inside of unexcavated foundations and 6 inches for exposed exterior of outside walls is sufficient to give protection against subterranean termites, since these termites rarely build covered ways over foundations in the open.

(2) Strong or rich Portland cement mortar should be used in masonry foundations.

(3) All masonry foundations composed of units should be capped with concrete or cement mortar at least 2 inches thick, or mortar and slate.

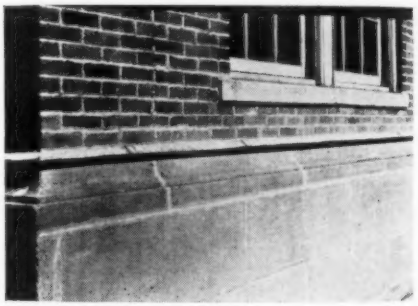

Fig. 5.—Strip metal termite shield on the exterior surface of a foundation wall of a building in the United States. This shield is not necessary on the exterior of this type of wall.

(4) Mechanical barriers composed of noncorrodible metal should be placed over foundation walls. This metal termite shield often is unnecessary on well-exposed exterior surfaces (fig. 5), but is essential on interior surfaces (partially excavated portions of basements, closed-in sunparlors, porches, steps, etc.) where tubes cannot be readily seen and broken off. Where the capping of the foundation wall is not effective, a "bread pan" type of shield should replace the narrow "strip" type of shield and should cover the entire top of the foundation walls. Such a type of shield was placed on the Mt. Vernon residence of George Washington under the writer's supervision in 1932.

(5) Proper ventilation (2 square feet of net opening per 25 linear feet of wall) and adequate screening of all ventilation openings and doors should be provided and maintained open (free from obstruction).

(6) All wooden forms on foundations should be removed from masonry work within 15 days, and grading stakes should be removed before concrete is laid; other wood, such as risers to basement stairs, etc., should be placed over the concrete. All casual wood and debris must be removed after the work is completed.

Model Buildings

At the Centennial Exhibition which opened in June, 1936, at Dallas, Texas, a frame building (5-room bungalow) embodying the termite-proof features recommended by this Bureau was exhibited in 1936 and

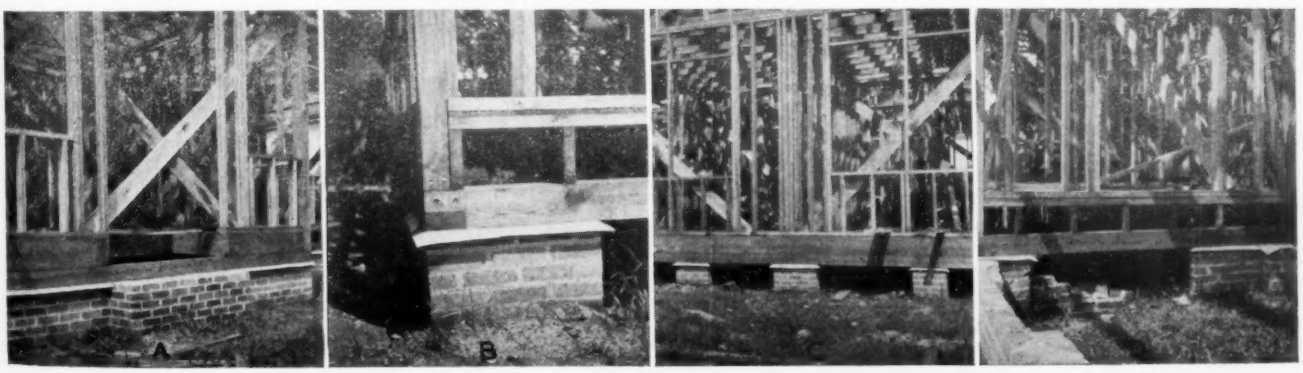

Fig. 6.—Improperly installed metal termite shields on building at New Orleans, La., September 22, 1936. Short and Zimple Streets. (A) Unprotected entrance without shield and untreated mud sill; (B and C) no concrete capping on brick foundation wall and shield extending out horizontally only ½ inch; (D) poor connection of shield at offset in uncapped wall.

1937 by the lumber industry; this building continues to attract much attention.

Metal termite shields have been installed on several buildings in New Orleans which serve a very good educational purpose; in some cases the shields have been improperly installed (fig. 6); these latter installations will probably fail and are a waste of time and money. Proper design and installation are essential, and they should be kept under careful supervision.

Soil Poisons

It is realized that at times the structural methods of remedying termite damage to the woodwork of buildings are not practical from an economic standpoint, and therefore in 1933 large-scale tests of soil poisons were undertaken by the Bureau of Entomology and Plant Quarantine at Riverhead, Long Island, N. Y., in cooperation with R. C. A. Communications, Inc. About 30 basic chemicals were placed under test, all the more common proprietary soil poisons being used. The stopping, temporarily at least, of termite damage to buildings by means of soil poisons placed about the foundations is a possible solution in many cases where reconstruction appears to be impracticable. The use of soil poisons, or the chemical insulation method, however, is still very much in the experimental stage and, on the basis of present information, cannot be recommended as a permanent remedy; it constitutes a valuable supplement to structural repairs.

After three years of service many of the chemicals under test are still effective; the last inspection was made in the fall of 1936.

During 1935 similar soil-poison tests of about 16 basic chemicals were installed near New Orleans, La. No conclusive results have been obtained as yet; the last inspection was made in the fall of 1937; some new chemicals appear to be promising. In June 1937 these tests were supplemented by including the inspection of 50 buildings treated with soil poisons by commercial termite-control operators — before treatment, during treatment, and after treatment. In addition, buildings are being treated, under the direct supervision of the Bureau of Entomology and Plant Quarantine, with soil poisons which they believe to be effective. The data on relative effectiveness and costs of these treatments will be of very great value. Already considerable progress has been made on this project.

It is possible that the results of these soil-poison tests now under way may change future recommendations of the Department of Agriculture, but until then the Department's present recommendations will remain in effect.

Wood Preservatives

This Bureau, in cooperation with the Forest Products Laboratory of the Forest Service, since 1911, has conducted tests to determine the most effective wood preservatives and methods of applying them to protect the wood of buildings, timber, poles, etc., from attack by termites. In the Canal Zone, Panama, in addition to small stakes impregnated with many different chemical wood preservatives, tests were made of short sections of impregnated telephone poles, buildings constructed of chemically impregnated timber, including interior finish, and containing impregnated furniture, as well as poisons for pulpwood and fiber products, in sheets and as panels in specially constructed buildings. In 1928 a series of "international termite exposure tests" was set up in several tropical countries where termite damage is serious.

As yet we have no data to show any reason why the Federal specifications (U. S. Treasury Department, TT-W-571a) for wood preservatives should be changed. These specifications stipulate that, where timber must be used in contact with the ground, it should be impregnated with coal-tar creosote; and where it is used above ground and finished or painted after treatment it should be impregnated with zinc chloride. The Eighth Progress Report on the international termite exposure tests was issued in January, 1937. Additions recently have been made to the tests in Panama, and in the Tropics only the tests in Panama have been enlarged since 1928.

Impregnated woods that have failed are shipped to the Forest Products Laboratory to determine the cause of failure. Several tests under varying environments supplement our tests in Panama, and no conclusions are drawn from the results of one test alone. Efforts are made to test all promising new preservatives in case the manufacturers will meet our requirements, that they make known, in confidence, the formulae and have the impregnations made at the Forest Products Laboratory or under the supervision of a staff member.

In 1935 wood-preservative tests consisting of 2 by 4 inch stakes, 3 feet long, and impregnated saplings, including new chemical treatments, were installed in the DeSoto National Forest near Saucier, Miss., near Bogalusa, La., and near Crown Point, La. In April, 1937, additional service tests in the form of a large series (25 chemical-impregnation treatments of 100 pine fence posts for each treatment, including new preservatives) were installed.

These tests in the Gulf States, including practically all commercial preservatives, will serve as a supplement to our tests in the Tropics and will put to trial several promising new chemicals. Examinations will be made at least once each year.

As is indicated in publications of this Bureau, but very little chemically impregnated timber need be used in properly constructed buildings in the United States to secure protection from subterranean termites, which cause the principal and most serious structural damage. This treated wood is recommended in the foundations, **but foundations of chemically impregnated wood or treated wood over masonry foundations alone, without the termite shield, will not afford protection against termites. They do not form a 'shield of treated wood."** We have definitely proved by our test buildings in Panama that termites will build their tubes up over treated wood to gain access to untreated woodwork above or untreated material within the building.

Experiments on poisons for fiber insulating boards are under way in both Panama and Louisiana and include some promising new chemicals. Several manufacturers are cooperating in these attempts to termite-proof insulation boards.

Termite Resistant Woods

In view of the fact that but few termite-resistant woods occur in the world, it is, in general, not recommended that attempts be made to obtain such woods, but rather that commercial woods grown in the United States be impregnated with standard chemical wood preservatives. It has been discovered that certain native-grown trees in the United States have woods that are resistant, although not immune to termite attacks even where they are used above ground. When such woods are placed in contact with the ground, our tests demonstrate that the chemical extractives, which render these woods resistant, are leached out; and we do not recommend that such untreated timbers be used in contact with the ground. In such situations we recommend that the timbers be impregnated with coal-tar creosote. Hence, in recommendations in publications of this Bureau for foundation and basement construction, including sills, it is intended that such termite-resistant woods be used instead of less resistant woods over masonry foundation walls or piers, and not as mud sills or other timber in direct contact with the soil.

Federal Specifications

In 1933 specifications were written for the United States Treasury Department, custodian of most Federal buildings, indicating in detail how to prevent (E-338) and remedy (E-327) termite damage to the woodwork of buildings. In 1934 these recommendations were revised for the Reconditioning Division of the Home Owners' Loan Corporation and the Federal Housing Administration. These specifications were again revsed in 1937 and are available in mimeographed form. They have been widely distributed throughout the country.

Department of Agricultural Film Strip

For educational purposes a revised film strip entitled "Subterranean Termites and Their Control" has been prepared by this Bureau; suitable legends accompany the pictures. This strip can be borrowed or purchased from the Extension Service, U. S. Department of Agriculture, Washington, D. C.

Cooperation With the National Lumber Manufacturers' Association

The National Lumber Manufacturers' Association and its subscribing organizations, especially the Southern Pine Association, have given this Bureau excellent cooperation in the work on termite control. In their bulletin "Exposing the Termite," issued in February and March, 1937, they have followed our recommendations in this paper written for the lumberman and consumer. This Bureau is in sympathy with the lumber industry's campaign against "jerry building" and its endeavors to have quality lumber used in house construction. The lumber industry, especially in the South, is insisting on **grade marked,** as well as **trade marked,** lumber.

Cooperation With the National Pest Control Association

The Bureau of Entomology and Plant Quarantine has been in sympathy with the efforts of the National Pest Control Association to place the industry on a higher plane, discourage unethical advertising, encourage more effective, cheaper methods, and obtain a better understanding between the industry and government officials. I believe that much good has already been accomplished and am hopeful for future cooperation and the future of the efficient termite control operator.

Cooperation With National Board of Fire Underwriters

The National Board of Fire Underwriters, in a pamphlet entitled "Termites and the Fire Hazard," have endorsed this department's methods of termite control and have deprecated the use of inflammable chemicals by termite-control operators.

Publications Relating to Termites

For the information of those who desire to have more complete and detailed in-

formation on termites and their control, the following literature can be used as references:

1920—Banks, Nathan, and Snyder, T. E.—A revision of the Nearctic termites, with notes on biology and geographic distribution. Smithsonian Inst., U. S. Natl. Museum., Bull. 108, 228 pp., 70 text figs., 35 pls.

1926—Snyder, T. E.—The Biology of the Termite castes. Quar. Rev. Biol. 1 (4): 522-552, 15 figs. October.

1934—Kofoid, C. A. (ed.), and others.—Termites and Termite Control. A report to the termite investigations committee. 734 pp., 182 figs. University of California Press, Berkeley, Calif.

1935—Snyder, T. E.—Our Enemy the Termite. Comstock Publishing Co., Ithaca, N. Y., 196 pp., 56 figs., 9 pls.

1936—Turner, N., and Townsend, J. F.—Termite Control in Buildings in Connecticut. Conn. Agr. Expt. Sta. Bull. 382, pp 209-242, figs. 78-92. New Haven, Conn. March.

1936—Snyder, T. E.—The Termites of Louisiana and Their Control. La. Conservation Rev. 5 (4): 26-33, 10 figs. October.

1937—Hunt, Geo. M., and Snyder, T. E.—An International Termite Exposure Test—Eighth Progress Report. Proc. 33rd Ann. Meeting Amer. Wood Preservers' Assn., New Orleans, La., Jan. 26-28, pp. 279-290.

1937—Exposing the Termite. Natl. Lumber Manufacturers Assn. 11 pp., 14 figs. Washington, D. C.

Flour Insect Control in Warehouses

"The Problem of Controlling Insects in Flour Warehouses" is the subject of an article in the November, 1937, issue of American Miller, under the authorship of R. T. Cotton, George B. Wagner and H. D. Young. The concluding statements on what can be done to prevent losses will be of interest.

"Care should be taken to see that only insect-free flour is placed in storage. This can be assured only if the proper type of redress machinery is used. The utilization of sifters clothed with 10XX and 11XX cloth and located directly over the packer bins will prevent insects from being packed with the flour. The use of reels for redressing flour does not prevent insects from passing on to the packer bins.

"Stocks for blending, returning infested flour, or used bags should never be stored in or near the flour warehouse.

"Screenings and ovens from redress machinery should be spouted directly to a fumigating vault or sterilizing chamber.

"Freshly milled flour should not be stored temporarily near bran, shorts, or other material likely to harbor insects.

"An occasional fumigation of the flour warehouse can be relied upon to clean up infestations in the open spaces and around the stocks of flour, but it will not kill all insects located in and between the bags."

Many interesting and valuable data are given in this paper. For example, it is shown that HCN does not satisfactorily penetrate masses of flour. Little insect activity takes place at temperatures below 60° F., therefore only during summer and fall are insects likely to cause trouble. Especially interesting is the information on the effect of low temperatures. It is not unusual, according to the authors, in sections of the country having cold winters, for temperatures in the flour warehouses to drop low enough not only to stop insect development but actually to kill out all the infestations. For example, they show that the common flour insects, including the Mediterranean flour moth, confused flour beetle, red flour beetle, Indian meal moth, and saw-toothed grain beetle, are killed when exposed 24 hours at a temperature of 0° to 5° F.—Crop Protective Institute.

William F. Kroneman, who has been in charge of the Pyrethrum and Insecticide Division of Sherwood Petroleum Co., has joined the Prentiss organization in charge of Pyrethrum Concentrate sales.

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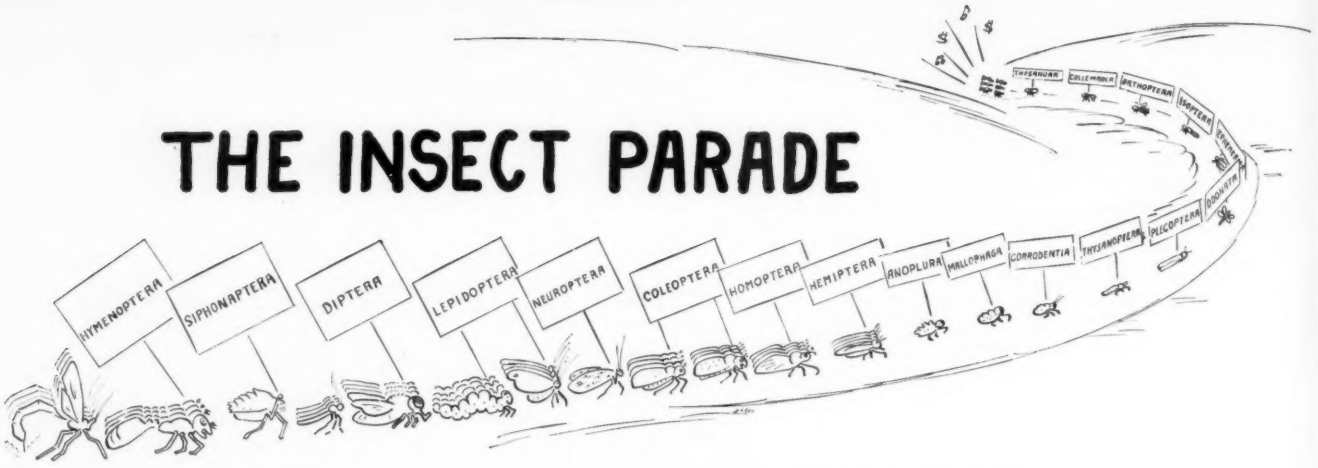

THE INSECT PARADE

Part X

By PROFESSOR HOWARD O. DEAY,
Department of Entomology, Purdue University, Lafayette, Ind.

ORDER DIPTERA — THE FLIES

(Continued from the February issue)

SUBORDER NEMOCERA—The Diptera with long antennae. The flies belonging to this suborder are slender bodied insects which have long slender antennae that are composed usually of from eight to sixteen segments.

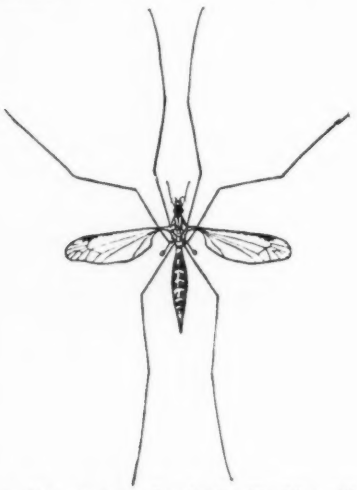

Fig. 100.—A crane fly, family Tipulidae. (U. S. D. A.)

The Crane Flies (Family Tipulidae): These are long-legged flies (Fig. 100) which look like mosquitoes, but they never bite. The crane flies may be distinguished from other similar flies by a V-shaped suture (sunken line) on the top of the thorax between the wings.

The adults usually frequent damp places where there is a dense growth of vegetation. The larvae vary greatly in their habits and habitats. Some live in water, others in swamps and others in dry soil. Most of them are scavengers, but some live on living plants and still others are carnivorous. For the most part the family is of no economic importance, but the larvae of a few species, called leather-jackets, do damage to pastures and grains by eating their roots.

The Moth Flies (Family Psychodidae): These are tiny flies, rarely more than a sixth of an inch long, which are so densely covered with hairs that it gives them a moth-like appearance. The larvae breed in decaying vegetation, in sewage, in cow dung, and in water. Those that breed in sewage often become very abundant in houses. They seem to have a short life cycle, developing from egg to adult in three or four weeks.

The Midges (Family Chironomidae): These are minute delicate flies with slender bodies and usually with feathery antennae. They resemble mosquitoes closely, but can be distinguished from them by the fact that the wings and wing veins of mosquitoes are fringed with scales. Midges often appear in large numbers, dancing up and down in the air, on sultry days.

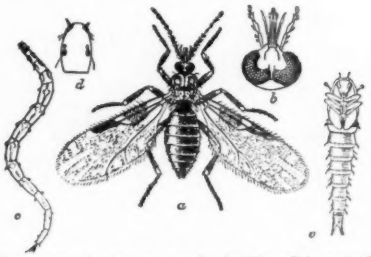

Fig. 101—A "no-see-um," family Chironomidae: a, adult; b, head; c, larva; d, pupa. (Riley and Johannsen.)

Most of the midges are harmless, but the sand-flies, punkies, and no-see-ums, which belong to the genus Culicoides (Fig. 101) are voracious blood suckers and make life miserable for fishermen, woodsmen and others who frequent woods. These flies are the smallest of our blood-sucking Diptera, being less than a twenty-fifth of an inch long.

The Mosquitoes (Family Culicidae): Although everyone is familiar with mosquitoes, it may be well to point out some of their distinguishing characteristics. They are small, slender flies with narrow wings; the antennae of the males are plumose. There is no V-shaped suture on the thorax as in the crane flies. The most characteristic feature of the mosquitoes, however, is a fringe of scales on the margins of the wings and in most cases on each of the wing veins (Fig. 102).

The larvae of mosquitoes, which are called "wrigglers," "wigglers," or "wiggle-tails" because of their characteristic mode of swimming, live in water. They breathe through a tube near the end of the abdomen which they stick above the surface of the water.

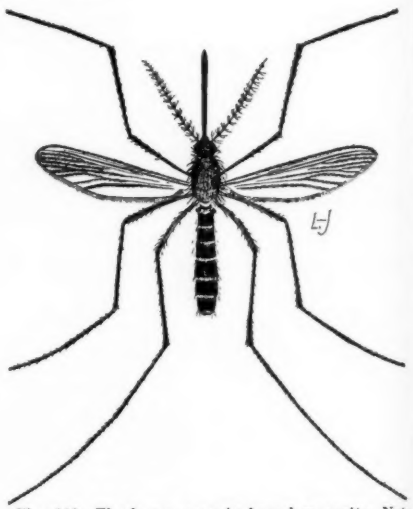

Fig. 102—The house, or rain barrel mosquito. Note the fringe of hairs on the wings and wing veins. (N. J. A. E. S.)

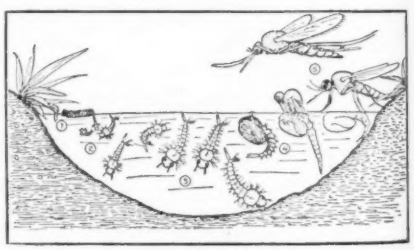

Fig. 103.—Developmental stages of a house mosquito: 1, eggs; 3, larva in natural position at the surface of the water; 4, pupa ("tumbler"). (N. J. A. E. S.)

The pupae (Fig. 103) differ from most other pupae in that they live in water and in that they move about. They swim by a peculiar tumbling motion which has earned them the name of "tumblers." The pupae have two breathing tubes which are born on the thorax.

Although all adult mosquitoes are thought to suck blood, many species do not; and only the females do in the blood-sucking

species. The mouthparts of the males are not adapted for blood-sucking. They feed on nectar and the juices of fruits.

The injury caused by mosquitoes is well known. Their bites are very annoying, but their chief injury is the transmitting of the causative organism of certain diseases, principally malaria and yellow fever. Mosquitoes are the only known transmitters of these two diseases.

The mosquitoes which occur here belong for the most part to two groups: the rain-barrel or house mosquitoes (genus **Culex**) and the malarial mosquitoes (genus **Anopheles**). The adults of the two groups can be distinguished by their positions while feeding (Fig. 104); the house mosquitoes hold

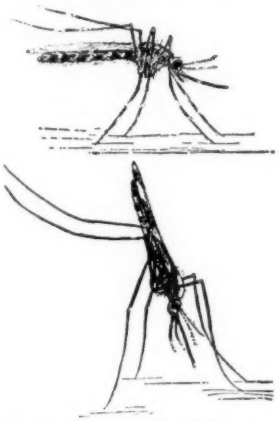

Fig. 104.—House mosquito (Culex) above and malarial mosquito (Anopheles) below, showing position of the body when feeding. (U. S. D. A.)

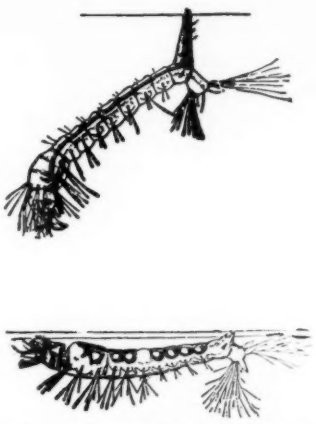

Fig. 105—The larva of the house mosquito (top figure) hangs head downward when in a natural position in the water; the larva of the malarial mosquito (bottom figure) holds its body parallel to the surface of the water. (U. S. D. A.)

their bodies parallel to the surface on which they are feeding while the malarial mosquitoes hold their bodies at an angle. The larvae (Fig. 105) may be distinguished by the fact that when in a natural position in the water the body of the malarial mosquito larva is held parallel to the surface and that of the house mosquito hangs head downward from the surface.

The Fungus Gnats (Family Mycetophilidae). These minute flies (Fig. 106) look like small mosquitoes, but they do not have the fringe of scales on their wings and the first segment of their legs is very long. The larvae of most species live on mushrooms, usually out of doors, but they are sometimes serious pests in mushroom cellars. Other species feed on decaying vegetable matter and are often numerous in greenhouses.

Fig. 106.—A fungus gnat, family Mycetophilidae. (Mc. A. E. S.)

The Gall Gnats (Family Cecidomyiidae): These are small, delicate flies which are rarely seen. Some of the species are parasitic or predacious upon other insects, but the majority feed on plants, producing galls (abnormal plant growths) on them (Fig. 107). The most noted member of the family, however, is the Hessian fly (Fig. 108) which is the most serious pest of winter wheat in this country.

(Continued on Page 12)

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Fig. 107.—Injury of the chrysanthemum gall-fly, family Cecidomyiidae. Note the small cone-shaped galls on the stems and leaves. (Davis.)

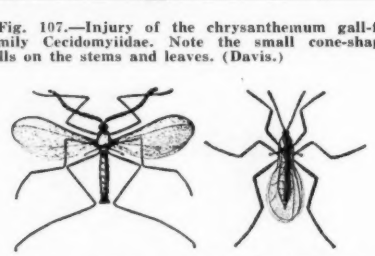

Fig. 108.—Hessian fly, family Cecidomyiidae. The larva of this fly is the most destructive past of winter wheat in this country. (U. S. D. A.)

Fig. 109.—A black fly or buffalo gnat, family Simuliidae. (Ky. A. E. S.)

The Black Flies (Family Simuliidae): These flies are also called "buffalo gnats" and "turkey gnats." They are small, humpbacked, short legged flies (Fig. 109). The females of many of the species are vicious blood-suckers, and are serious pests of man and other animals, especially in the north woods and in areas near streams, as the larvae breed in water. Unlike mosquitoes and midges, the adults like bright sunlight and heat, and therefore feed throughout the day.

(To be continued in the April issue)

California Pest Control Association

Fourth Annual Convention Very Successful

CALIFORNIA does not very often admit rainy weather but despite the inclement weather reports are that a few short of one hundred attended the Fourth Annual Convention of the California Pest Control Association held at Santa Barbara, California, on February 11th and 12th. The speakers and clinics were highly interesting. Throughout the convention there was noticed the intense seriousness on the part of those attending to take part in the more important discussions that would make for better pest control operations.

George A. Rader sounded the keynote and general purpose in his annual report. Some of the comments made by Mr. Rader were:

"Every convention has two sides, one its business and educational side, the other its social side. Such emphasis is usually laid upon the social side that in the public mind there is some misunderstanding of a convention's real purpose. Hearing of its pleasures and its entertainments, one might assume that the sole mission of those in attendance is to play golf or otherwise enjoy a two or three days' picnic.

"By no means should we minimize the importance of the social side of our conventions. In our social contacts we get really acquainted with each other, we discover that Mr. So and So isn't such a bad fellow after all; we may have been unjustified in forming a hasty opinion, we find that we have thoughts, ideas, habits, hobbies, in common, other than those created by our business alliances. As a place for a meeting of this kind Santa Barbara is unsurpassed. All under one roof, with few outside influences or temptations to divert us, our social activities must be among ourselves. We are already discovering that our fellow-members of the pest control industry are delightful people and we should continue to become better acquainted. It is the earnest hope of Mr. Mollard and his convention committee that your attendance at this, our Fourth Annual Association meeting, will be both pleasant and profitable.

"But after all, this is a business and educational convention; its social side must be incidental to the former. Our main purpose in being here is that we may profit, individually and collectively, through the exchange of ideas and information. We shall profit most from what we learn, and we can learn only by being business men when business is being considered. If we do not so profit, then the convention will have failed in its real purpose. Let me urge therefore, not merely as a courtesy to our speakers who have devoted time to the preparation of papers and reports, nor out of consideration to a very efficient convention committee which has worked hard to arrange a program of inspirational and educational interest, but for your own benefit—that you make it a duty to attend all clinics and be present at all convention sessions.

"The pest control industry, as such, is in its infancy. The California Pest Control Association is a mere child. Our first Annual Convention was held in Southern California in 1935, the second one was at Fresno in 1936. Up to that time we had no statewide organization. In the southern part of the state there were two or three small groups whose memberships consisted of men interested in various phases of pest control work. The principal southern group was known as the Exterminators and Fumigators Association of Southern California. In the north we had the Northern California Pest Control Association — both rather long titles. It was during the summer of 1935 that a few of the more substantial far-seeing members of the industry saw the wisdom of having a united, state-wide association. Among those fine individuals were such men as Jess Miller, Wilbur Smith, L. R. Alderman, Ray Lovejoy, Wallace Tanner and others. These men realized that nothing of a really worthwhile nature would be possible unless those scattered groups were united into one unified body. The history of organized bodies the world over shows conclusively that small detached rival associations whether friendly or antagonistic, are of little or no real value. Let us refer to the dictionary for a definition of 'organization;' it says, 'Any vitally or systematically organic whole; an association or society.' We find that a society is defined as 'A voluntary association of individuals for common ends.' Now let us see what it says about association; 'An association is a union of persons in a society for some common cause; as, a scientific or professional association.' It is in this latter category, gentlemen, that we as a group belong.

"We, like many other groups, are organized for the general betterment of an important industry. We are a union of per-

Convention at Santa Barbara, California, of the State Pest Control Association, February 12, 1938.

sons bound together by scientific and professional interests. We are interested in the advancement of that branch of science which has to do with the development of a better understanding of the life habits of the many types of insects and rodents which are so destructive to the things man desires to preserve. As we know with accuracy those habits we thereby become better equipped to develop more efficient means for controlling the onward march of the insect and rodent parade. We need not be accused of being selfish in our desire to seek knowledge. The more thoroughly we understand this business of pest control, just that much better are we equipped to render that honest and efficient service which the public has a right to demand, and individual profit will follow as a natural result.

"I wonder how many people have studied history's sorrowful chronicle of the horrible acute infectious fever known as 'bubonic plague,' a name synonymous with disaster wherever it strikes—the 'Black Death' it has been descriptively labeled. I wonder if there are many who are aware of the fairly recent discovery that this dreaded plague is conveyed by fleas from rats and squirrels to human beings. Millions of human lives have been the toll in centuries past, entire cities have been wiped out by the 'Black Death.' Even as recent as 1919 in Oakland, Calif., 14 cases of pneumonic plague occurred; all but one of these died. Later, in 1924, 30 died out of 32 cases in the city of Los Angeles. Thanks to scientific research sponsored by the Rockefeller Institute we are now equipped to cope with this dreaded disease. After centuries of fruitless endeavor, it was not until 1907 that fleas were definitely known to be the conveyors of the 'Black Death.'

You have seen that throughout many years a lack of **accurate knowledge** proved costly. Many of you are engaged in the business of rat and flea control. Through scientific research it has been accurately determined that fleas, associated with rodents, convey the bacillus pestis to humans. In your efforts to control, or exterminate, rats and fleas, you are rendering a genuine service to humanity. Yours is not a trade, but a profession, and it would be well for the health departments of our cities to reorganize your services as an important adjunct to the community health organization.

"**'Knowledge'**—that word has much significance. By attending these annual conventions and our conferences, you are enabled to hear outstanding authorities bring their messages which are of vital importance in helping you to become more proficient in this business of pest control.

"It was with the thought of bringing together the licensed pest control operators of the entire state that prompted the amalgamation of the Southern and Northern California associations. It was realized that in numbers and unity there is strength. Worthwhile conventions and needed legislation cannot be had unless there is unity in the profession. Nowhere can real progress be attained where the groups are scattered. Unless we are united in a single well-grounded association we cannot hope to attract men of prominence to appear at our annual get-togethers, nor can we hope to accomplish the ends that may be attained through the passage of desirable legislation.

"One year ago at San Jose this association held its third annual convention. That convention was one which those in attendance will remember for its outstanding educational value, and for the many splendid friendships that were made. It was then that the name 'California Pest Control Association' was adopted.

"In all future legislative matters affecting the California Pest Control Industry, I most earnestly recommend that this association work in close cooperation with the members of the Structural Pest Control Board, and that legal advice be obtained on all proposed amendments, or changes in the existing act as may be considered desirable. I also heartily recommend that this association work in close harmony with the State Contractor's Licensing Bureau in all matters of a conflicting nature. It is my opinion that all differences—if there be any—can be settled amicably through mutual understanding and a sincere desire to cooperate.

"A thing, which in my opinion, is of outstanding importance, is the inauguration of the Pacific Coast Pest Control Conference. I believe the majority of you have already learned something of the Purdue Conferences which last month drew an attendance of well over a hundred operators from 22 states. Our conference, which will be held at Stanford University next month, is patterned after the one at Purdue."

The program was as follows:

Thursday evening, February the 10th

7:00 to 10:00—Registration.

8:00 to 10:00—Committee Meetings.
Board of Directors.
Ladies Committee.
Legislative Committee.
Constitution By-Laws.

(Continued on page 14)

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PYRETHRUM POWDER

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Finest ground powders of their kind in the world. Contain more killing particles per ounce. More effective and economical because they come into more intimate contact with vital parts of the insect's body.

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For the control of rats and roaches this product is widely and successfully used by Pest Control Operators throughout the country.

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Manufacturers of Exterminating Products Since 1874

Friday, February the 11th

800 to 9:00—Registration.
9:00 to 10:00—Call to order..C. W. Mollard, General Chairman.
National Anthem.
Introduction of Mayor Maher of Santa Barbara.
Address of welcome by Mr. Maher.
Response by W. Tanner.
Introduction of honored guests.
Introduction of State President G. A. Rader.
10:00 to 10:30—Address—Fumigation.....Dr. John N. Stone, American Cyanamid Co., Azusa, Calif.
10:30 to 11:00—Address—Rodents.....Mr. Eugene Kellogg, S. B. County Agricultural Commissioner.
11:00 to 11:30—Address—Termites and Other Wood Boring Insects.....Walter Putnam, Building Superintendent, Pasadena.
11:30 to 12:00—Address — Insects Injurious to Clothing and Household Furnishings.....Mr. A. B. Woodham, S. B. County Entomologist.
12:00—Adjournment for Lunch.
1:30 P. M.—Convention Reconvenes—W. F. Smith, Chairman.
1:35 to 2:25—Clinic—Rodents.....V. H. Montgomery
2:30 to 3:20—Clinic—Fumigation.....J. N. Johnson
3:30 to 4:50—Clinic—Termites.....W. B. Tanner
5:00 to 5:30—Clinic—Ants....E. A. Roberts
5:30—Adjournment for dinner at Carrillo Hotel.
6:30 to 7:30—Dinner at Carrillo Hotel—Garden Room.
7:30 to 8:15—Clinic — Moths, Silver-fish and Carpet Beetles.....O. W. Dickens
8:15 to 9:00—Clinic—Roaches, Bedbugs, Fleas, etc.....A. L. Forde

Saturday, February the 12th

7:30 to 8:30—Convention Breakfast, Carrillo Hotel—Garden Room.
9:00—Convention called to order.....E. Mills, Chairman
9:00 to 9:30—Address—Salesmanship.....John Sigler, L. H. Butcher Co., L. A.
9:30 to 10:30—Address—Legislation.....Glen V. Slater, Registrar, Structural Pest Control Board.
10:30 to 10:45—Recess.
10:45 to 11:15—Address—Success in Business.....Mr. Rhodehamel, Seaside Oil Co., Santa Barbara.
11:30 to 12:00—Board of Directors and Committee Meeting.
12:00—Adjournment for Lunch.
1:30—Convention Reconvenes.....Chairman Carl Strom
1:30 to 2:00—Address—Advertising.....Mr. E. A. Jaynes, S. C. Telephone Co., L. A.
2:00 to 2:15—Recess.
2:15—Business session for members only included the following matters:
Reading of the minutes.
Correspondence.
Financial report.
Report of Standing Committees.
Report of Nominating Committee.
Report of Resolutions Committee.
Report of Credentials Committee.
Report of Convention Committee (1939).
New Business.

7:00 P. M.—Annual Banquet—El Paseo Restaurante.

Election of officers for the ensuing year took place and Lee W. Christensen of San Diego, Calif., President; Walter B. Tanner of Los Angeles, First Vice-President; Ernest Mills, San Francisco, Second Vice-President; Robert E. Hackley, Palo Alto, Secretary-Treasurer; C. P. Cain of Fresno, to the Board of Directors, were elected. The other directors continue to hold office.

Oakland, Calif., has been chosen for the 1939 Convention and will probably be held the latter part of February, coincident with the opening of the San Francisco Exposition.

Among the comments that have been received about the worthwhileness of the convention was a letter from Mr. John N. Stone of the American Cyanamid and Chemical Corp., who wrote:

"I would like to have you express to the officers and the members of the California Pest Control Association, the sincere appreciation of Mrs. Stone and myself, for the many very gracious courtesies extended to us while we were in attendance at the Santa Barbara meetings. We both enjoyed to the fullest, the meetings and entertainment. I can honestly say that I have never attended any similar meetings that I considered so worthwhile. I hope that in some way either I, or the firm that I represent, will be able to repay your Association. Please express to the members our wish that they will call upon us at any time, for any help that in their opinion we can render them."

1938 CONVENTION COMMITTEES
C. W. Mollard, General Chairman

Registration—G. R. Lovejoy, M. Phillips, R. J. Marker.
Program—Carl Strom, E. Mills, Wayne Davis.
Entertainment—A. E. Alderman, B. Gillmour, C. E. Musgrove.
Speakers—C. W. Mollard, W. Tanner, George Rader.
Exhibits—Jess Miller.
Clinics—W. F. Smith, Johnson, Montgomery, Tanner, Roberts, Dickens, Forde.
Publicity—A. E. Alderman, V. H. Montgomery, R. Hunt.
Technical Advisors — A. B. Woodham, Ants; Mr. Eugene Kellogg, Rodents; W. Putnan, Termites; Dr. John N. Stone, Fumigation; Mr. G. C. Woodham, General Pests.
Ladies Committees—Mrs. A. E. Alderman, Mrs. A. E. French, Mrs. W. K. Davis, Mrs. L. W. Christensen.
Sergeant at Arms—G. W. Peterson, Assistant, H. A. Suttle.
Entertainment of Speakers—L. R. Alderman and L. W. Christensen.

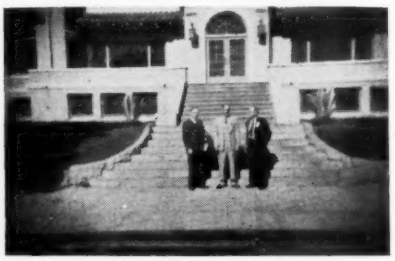
California State Convention Briefs

It takes more than a crutch to keep Clara (Mrs. W. F.) Smith from having a good time.

Mrs. E. A. French and Mrs. Arnold (Margy) Alderman are experts at entertaining the ladies. Thanks to you both for a wonderful time.

A dance floor, a piano and "Wally" Tanner can keep a party alive until the early hours of the morning.

"Lee" Christensen, the New Prexy, has a voice that doesn't need a microphone. "What a Man."



THE THREE PREXYS
G. A. Rader, 1937 Prexy — W. F. Smith, 1936 Prexy
L. W. Christensen

1938 Prexy
Snapshot of the New President and First Lady, with Mrs. Miller—taken at Santa Barbara Convention.

Mother (Mrs. L. R.) Alderman has adopted several new sons.

An extemporaneous program at the banquet was very entertaining.

A large per cent of the Pest Control Ladies answer to "Secretary," "Bookkeeper," and even "Banker."

We are very proud of our New First Lady, Mrs. L. W. (Eva) Christensen—so easy to look at, dance with, talk to, and even agree with.

The "Montys" waste no time sleeping while at convention.

We like the kind of "Stones" the American Cyanamid send us.

Quote "It never rains in Santa Barbara."

L. R. Alderman always has another "That Reminds Me" story.

George A. Rader, now Past Prexy, has proven that he will fight for the truth as he sees it, with never a thought of the heartache, embarrassment or work it may cause him. The recent convention is proof of the winner. Our hats are off to you George, for a difficult job, well done. You deserve the spoils of the victory.

Ray Lovejoy, Registrar of the Convention, is all that his name implies—a "Ray" of Sunshine—"Love" in his heart for all mankind—and what a "Joy" to know such a man.

"Dickens" also lives up to his name.

Charles Mollard did a splendid job as Chairman of the Convention. We now believe in Santa Barbara, in the CALIFORNIA PEST CONTROL ASSOCIATION, INC., and in Charlie.

We honestly admit it was the BEST State Convention to date, and are looking forward to next February at Oakland. "We'll be seeing you."

Discussion on Rodents—Rat and Mice Control

By FRANK BRIANS, Agricultural Inspector, Santa Barbara County

EDITOR'S NOTE: *We are pleased to submit the address delivered by Mr. Brians before the Fourth Annual Convention of the California Pest Control Association held at Santa Barbara February 11 and 12. It is appreciated that some of our readers will not agree entirely with some of the remarks, and yet we feel there are so many valuable thoughts that we have printed the address in full. Mr. Brians has emphasized many points and has indicated the necessity of Sanitation and Rat Proofing which is as it should be. Essentially for control measures and especially with regard to baiting, experience has shown the importance of alternation of baits and most effective results when such is done.*

RATS affect a larger percentage of the population of the globe than any other pest in existence. Infesting almost the entire world, they carry on unceasingly their work of destruction and transmitting disease. The rat is an outlaw with no redeeming qualities. Rats are omnivorous feeders, eating nearly all kinds of animal and vegetable matter. They begin breeding before six months of age and annually produce four or five litters, averaging about ten each.

Large losses are suffered in the cities and rural districts of California through the depredations of the Norway, Alexandrine and Black rat; these are also called common rat, house rat, wharf rat, barn rat, gray rat, domestic rat and brown rat, also the roof rat. These are all introduced species from Europe. Two European relatives, the black rat and the roof rat, preceded the brown rat to the New World and became widely distributed. They resemble the brown rat, but are much smaller and are soon killed, driven away, or reduced to a secondary status by their larger and fiercer cousin, which averages about 16 inches in length, although large individuals attain a length of more than 20 inches and a weight of more than 2 pounds. The black rat has nearly disappeared from most of its former haunts in the United States and the roof rat is mainly restricted to the southern localities with a mild climate, which does not appear attractive to the brown rat. Neither the brown, black, nor roof rat has any near relatives among native rats of America, and all may be distinguished from our native animals by their coarser hair and long, naked tails.

The Pied Piper of Hamelin performed a definite act of service when he rid the town of rats. Pied Pipers are needed today, and why?

For hundreds of years plagues have taken their toll of human lives, thousands dying in a day in congested areas or large cities. The plague exists in three forms—Bubonic, Pneumonic, and Septicemic. The first two named have occurred in California.

Man generally contracts the disease from rodents, and the rat is probably the chief factor in the spread of any plague; for he is a world traveler, and comes in closer contact with man than any other rodent. The ground squirrel also plays a part in the spread of plague. Before any outbreak of epidemics, it has been observed that the rats and ground squirrels have died in large numbers. This was the case in California.

In 1919 there were fourteen cases of pneumonic plague in Oakland, and thirteen of these were fatal. An Italian who supposedly had influenza, died in five days after taking the disease. A second case similar to the first, occurred in the same house. Others who had been in contact with these cases came down in quick succession with this disease. Upon investigation, it was learned that the first patient, a short time before, had shot ground squirrels and brought them home, where they were prepared for eating.

In 1924 there was an epidemic of pneumonic plague in Los Angeles. Thirty of the thirty-two victims died. An area of eight city blocks was quarantined, and strict measures were taken to discover the cause. There was a campaign against rats and ground squirrels, extending even into the rural districts. Infected rodents were found.

While there have been some deaths in

(Continued on page 16)

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California, the situation should be regarded as important rather than critical. But the fact remains that mankind must war relentlessly upon the rat.

In reading this discussion on rats, the methods of control refer to rats. Generally we can assume that the same methods applied to mice are usually effective, as their control is generally easier than rats.

Damage done by rats and mice to products and property in the United States amounts to hundreds of millions annually. Such enormous losses affect the ultimate price of products produced, in which everyone shares whether he maintains rats on his premises or not.

Rat control is a case of man matching his wits against the highly developed instincts of the rat. Rats have been associated with man from the earliest dawn of civilization, and have acquired and developed instincts that protect him in the fight of mankind to destroy him. With all the methods developed to combat the rat, this pest is still mankind's greatest enemy.

With all of the methods developed, one wonders at times, if we are gaining any headway. We undoubtedly are, due to the efforts of scientific, governmental, and pest control agencies, gaining a better understanding of the job before us. A better understanding of the life and food habits of this pest, and in the more scientific use of poisons, have advanced the control of rats in the last twenty years.

The large number of failures to exterminate rats is due in part to the use of ineffective methods. Advertisers and manufacturers of poisons, traps, and of countless contrivances flood our newspapers and magazines with an imposing array of plausible arguments and flattering testimonials, proclaiming their products as the best and only sure way to rat riddance. This does not mean that all these anti-rat products are without merit. Natural agencies unaided, such as cats, dogs, and birds of prey, etc., can not wholly be relied upon to do the work for us. Control measures must be intelligently applied and the results checked. Rats are hard to exterminate, and regardless of the method employed, success attends only close application and persistent effort.

The permanent exclusion of rats involves primarily the proper construction, repair, and up-keep of buildings and keeping the premises in sanitary condition. Rats require both food and shelter for their well-being and they can not continue to thrive with these requirements lacking. Infestations can generally be traced to these favorable conditions.

Most modern buildings and many older ones are so constructed as to be rat-proof or could be made rat-proof at relatively small cost. Owners of large warehouses, food depots, and other buildings in which produce and other supplies are subject to damage by rats have found that the cost of rat-proofing their buildings, even if the expense is considerable, is in the long run the best rat insurance. Whenever it can be accomplished at a reasonable cost rat-proofing is recommended as the best and most permanent means of rat control.

Rat-Proofing

The first step in rat-proofing a building with brick, stone or concrete foundation is to search thoroughly for all places in the structure where rats might enter, especially for small openings around pipes and for small cracks due to careless workmanship, sometimes in places where the exterior of the wall is hidden by porches or adjoining structures. Such openings should be closed with metal sheeting or with concrete. Basement windows and other large openings should be covered with strong and durable screening. Ventilators and sewer openings should be provided with gratings, and doors that are likely to be left open at night should be equipped with self-closing devices.

Buildings without rat-proof foundation walls should be elevated 18 inches or more and kept open on all sides and free from all accumulations underneath. Corncribs, granaries, and other food-storage buildings of this type should be equipped in addition with metal rat guards at the tops of supporting columns or entirely enclosed with wire mesh. Some buildings, particularly barns and other open-type farm buildings, can not be rat-proofed economically, but in most cases rats can be kept under control by eliminating rat harbors as far as possible and by persistently destroying the animals themselves.

Removal of Shelter

To remove places where, without fear of molestation, rats make their homes and raise their families is one of the most important problems in rat control. The surest way to permanent rat riddance is the removal of favorable rat harbors, for a rat will not remain where safe and comfortable shelter is not available.

The most common rat harbors are dead spaces within double walls and beneath floors. Considerable effort is usually required to abolish these shelters, but it is often essential to permanent rat control. Double walls may be shut off from rats by stopping the openings left between the studs and floor joist just above the sill. In old buildings walls may be stopped by fitting sheet metal between the joists and nailing it to the sill. Sealing hollow walls by this means is commonly called fire-stopping. It is of great value not only in retarding the spread of fire but also in improving insulation against heat and cold.

Wooden floors in buildings without basements, particularly on farms, provide a free shelter for rats. Where possible these floors should be replaced by concrete.

Other common rat shelters are those provided by stored produce and supplies, lumber piles, and accumulations of trash and refuse. Waste should be disposed of promptly and stored materials elevated on platforms at least 18 inches off the ground or floor. Thorough cleanliness and orderliness discourage the presence of rats and force them to seek other quarters. The entire removal of rat harbors is not always possible, but when this condition is approached the rat-riddance problem becomes simpler.

Cutting off the Rats' Food Supply

Food is an important factor in all rat infestation. Food shortage limits the number of rats that premises will maintain and reduces the breeding of rats. Hunger also renders poisoning and trapping more effective. The important means of abolishing the rats' food supply are to store foodstuffs in rat-proof buildings, room, or containers and to dispose of waste and garbage in tightly covered receptacles.

Destruction of Rats

Although measures for the permanent riddance of rats should be taken wherever practicable, they usually must be combined with rat destruction, and in many places continual rat killing is the only practical method of control. There are numerous materials and contrivances designed for rat destruction. Employment of methods of destruction adapted to certain local conditions will simplify rat control.

Poisoning

The most efficient means of destroying rats known, and the one most generally recommended, is poisoning. The chief objections to the use of poison are its danger to human beings and domestic animals and the possibility that rats taking it will die in inaccessible places where their decomposing bodies may cause obnoxious odors. The first objection can be met by using as mild a poison as possible and by exercising proper care in exposing it. The second objection may be practically overcome by using a slow-acting poison.

Success in poisoning depends largely upon the baits used and the methods of mixing and distributing them. The all-important requirement is to set out the kind of baits that the rats will eat. Experience has taught that the kind of poison used is generally of less importance than the kinds of bait used. Usually it is almost as difficult to get rats to eat unpoisoned foods as those that are properly prepared and poisoned. For this reason, regardless of the kind of poison used, it is important that care be exercised in selecting, mixing, and distributing baits.

The following discussion on poisons and gases used for rat and mice control, will take into consideration most of the poisons and gases that have been used in the past, and being used at present. The poisons and gases not readily being used now, have merit that warranted their use, on occasion could be used with results today.

Barium Carbonate

Barium carbonate (precipitated) is a heavy, white, mineral salt, mildly poisonous, tasteless, odorless, slow in action, and inexpensive, all of which characteristics contribute to its value as a rat poison. This compound has been proved also highly effective and dependable for killing rats when used in the proper way .

Red Squill

Red Squill is a perennial bulb that grows wild along the coast of the Mediterranean Sea. The bulbs are pear shaped, usually from 3 to 6 inches in diameter, and weigh up to 5 pounds. There are two commercial varieties, the white, used in medicine as a heart tonic, emetic, diuretic, and nauseant expectorant, and the red, which in addition has toxic properties of use as a rat poison. Squill contains calcium-oxalate crystals, which, on coming in contact with the skin, cause a sensation similar to that of a nettle sting.

Red squill as a rat poison has the distinct advantage of being relatively harmless to human beings and domestic animals. This is due in part to its acrid taste, which is highly objectionable to most animals, and also to the fact that it usually acts as an emetic when taken in dangerous quantities. Rats, however, usually take it readily and do not vomit, so that red squill approaches the unique position of being a poison specific to rats. Active red-squill preparations are therefore of particular value where the use of more toxic products would be inadvisable.

The chief objection to squill is that it has no uniform toxic standard, so that commercial red-squill rat poisons are apt to vary considerably in potency. It is therefore important that individuals, as well as dealers, purchase their supplies from manufacturers who will guarantee the toxicity of their products.

Red squill is marketed in both liquid and powdered form, and either one is ef-

fective. The powder, as a rule, however, is more toxic to rats, less expensive, and keeps better; it can be mixed readily with a wide variety of baits.

Other Poisons

Relatively mild rat poisons, as barium carbonate or squill are usually effective and are recommended. Sometimes, however, some of the more active poisons are necessary for complete success. In using a highly poisonous preparation additional care is necessary to prevent accident. Of the many poisons that will, when properly prepared, destroy rats, phosphorus, arsenic, strychnine, and thallium are of outstanding usefulness and form the basis of the majority of commercial rat poisons.

Phosphorus

Phosphorus is used extensively in commercial rat poison. It has distinctive taste, odor, and luminous properties by which it may be readily identified, but to which rats apparently do not object. Though undoubtedly effective against rats, phosphorus is dangerously poisonous, and in the absence of a good antidote is considered unsafe for general use. Fire hazard connected with the use of commercial pastes containing this element probably exists only when the percentage of the phosphorus is too high and the paste is not thoroughly mixed.

Arsenic

Powdered white arsenic, or arsenious oxide, is widely used in commercial preparations for the destruction of rats. It is practically tasteless and odorless and is usually taken readily when mixed with attractive baits in the proportion of about one part poison to 20 parts food, although a slight grittiness detracts somewhat from its palatability. A finely pulverized, non-gritty form of white arsenic has recently been demonstrated to be of greatly increased toxicity. Arsenic is somewhat variable in its effect upon rats, and if they survive a first dose they will refuse subsequent baitings. It is highly toxic both when taken internally and through local external application, and great care must be exercised in its use.

Strychnine

Strychnine is extremely poisonous. It has a bitter taste that must be disguised if it is to be used successfully as rat poison. Its rapid action also increases the chances that rats may die in walls and other inaccessible places in buildings. Strychnine is therefore not recommended for use in poisoning rats in buildings, but has been found useful under certain conditions in the open.

Thallium.

Thallium sulphate is a salt of thallium, a heavy metal similar to lead in its physical properties, which is now being extensively sold both in Europe and America as a rat poison. It is a cumulative and powerful poison, slow acting, and certain in its results. It is also tasteless and odorless, so that were it not for the grave danger attending its use it would make an ideal rat poison. Without taste or smell to identify it, however, such as have strychnine and phosphorus, thallium sulphate should be used only with the utmost caution, as it is most dangerous to human beings as well as to domestic animals.

Dry Material

The efficiency of a dry material as a rodenticide was discovered in connection with tests of sodium fluosilicate in destruction of weevil. Where 70% of this material with 30% talc is sprinkled on floors or runways, a sufficient amount adheres to the feet and belly fur of the rodent to cause death through ingestion in the process of cleaning itself. Mice succumb from 23 to 30 hours; rats in from three to ten days.

This method of rodent control has become exceedingly popular. The same precautions apply to its use against rodents as against insects. To control rodents, it may be used as barriers around sacked grain, along the stringers and on the floor. A water dish surrounded with a well laid shallow barrier of considerable width should prove very efficient. A number of 12-inch boards laid out edgewise along the walls in an empty warehouse provide an enticing runway for rats and mice. The floor surface under the boards may be heavily dusted without hazard from residual fluorine. Dust barriers may be placed to protect new grain from old infested lots, or vice versa. The thought should be born in mind that great care must be taken with sodium fluosilicate, in using it as a rodenticide.

Kinds of Baits and Pre-Baiting

The rat, contrary to popular opinion, is most discriminating in its feeding habits. The rarity of rat-proofing buildings contributes to the ease with which it may gain access to an ample and varied food supply. It can thus afford to be discriminating and to refuse stale or unattractive food.

(Continued on Page 18)

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Such selectivity reveals at once the uncertainty of achieving any very satisfactory degree of control through the use of any arbitrarily selected poisoned bait. Although studies of available rat-food and rat-environment often give a very definite clue to the type of bait that would be accepted, it is doubtful if one can determine exactly the bait a rat will prefer any more readily than he might determine the preferred food of a human being. It therefore is advisable in many instances to place one or more series of clean test baits, thus determining preferences, before attempting the control or extermination of black or brown rats by means of a raticide. This prebait procedure not only shows the bait most likely to be accepted but almost without exception develops one that is preferred to any other available food, thus allowing of good control in the face of an abundant local food supply.

It is of the utmost importance that treated baits reach all of the rats in a given infestation at the same time, for those that are left become wary, making it really difficult to exterminate them. Prebaiting shows quite accurately how much lethalized bait will be needed to do this. Prebaiting also tends to allay any suspicion the rats may have of the baits; furthermore it shows definitely where the rats are feeding. The spots where the best acceptance of poisoned baits may be expected are thus indicated. Prebaiting also tends to attract rats to definite feeding spots, making good control often possible even when premises are not thoroughly covered in the baiting. A variety of baits used separately gives the rat a choice of foods and increases the chances of the bait being taken.

Cereals, such as bread, corn meal, and rolled oats.

Meats, such as hamburg steak, sausage, sardines, or eggs.

Fruits and vegetables, such as apples, melon, bananas, and tomatoes, are used.

Baits should be fresh and of good quality.

Fumigation

The fumigation of rat burrows and other rat harbors is a simple and highly effective method of destroying rats and is recommended for use wherever a sufficient concentration of gas can be obtained readily. Unfortunately, however, rats are found in many places that can not be reached with gas, so that this method must usually be combined with poisoning or other methods of destruction.

Calcium Cyanide

Of the many chemicals commonly employed for destroying rats in their harbors, crude calcium-cyanide dust is of outstanding usefulness. Calcium cyanide is a compound that rapidly gives off hydrocyanic-acid gas when acted upon by the moisture in the air. This gas is extremely poisonous and in sufficient concentration is destructive to most animal life. It has come into use in connection with control operations directed against various rodent and insect pests, and the dust form of the compound has proved a highly effective agent in favorable situations for local extermination of rats.

Caution should be used in handling calcium-cyanide dust crystals and the hydrocyanic-acid gas, these are extremely poisonous and should be handled with the utmost care. Calcium-cyanide dust should not be transferred from the container to the duster indoors. Avoid breathing the gas given off, and always wash the hands after handling the poison. Cyanide should be used, only, by experienced operators.

Carbon Bisulphide

Carbon bisulphide is effective in destroying rats in their burrows in the ground and may be used in fields or in holes in dirt floors in chicken houses, cellars, and similar places. The gas is more effective in heavy damp soils and during wet weather. A wad of cotton or other absorbent material should be saturated with carbon bisulphide and pushed as far as possible into each burrow entrance. Entrances should then be closed with moist earth to prevent the escape of the gas. Long forceps are convenient for handling the absorbent materials.

Caution: Carbon bisulphide is highly inflammable and explosive and should be kept away from fire. As it evaporates rapidly, it should be kept in an air-tight container. If there are open flames, in or near the building, positively do not use carbon bisulphide.

Trapping

Trapping rats is just as effective as poisoning them, but it requires more skill and labor. It is recommended where the use of poison seems inadvisable. Careful attention to detail is necessary in trapping rats, as success will depend largely upon the skill and resourcefulness with which the traps are handled.

Although the more complicated traps and devices for catching rats are sometimes useful, the simple and inexpensive snap trap, sometimes called "guillotine," or "spring trap," has proved the most effective and consistent rat catcher. There is little choice among standard makes of this type of trap. The essential part is a very sensitive trigger provided with a hook or some other means of holding the bait fast. Large triggers have the advantage over small ones in providing a greater surface for the rat to step on and in being better adapted for use along walls and narrow runways, places where rats can be trapped successfully without baiting.

To get the best results, the following directions for baiting and setting snap traps should be carefully followed:

Kinds of Bait

The selection of baits for trapping is as important as in poisoning. Fresh baits, changed daily, should be used. A variety of baits, such as meat, vegetables, and cereals, on successive traps, will usually give better results than only one kind of bait. Among other foods that may be used as baits are raw or cooked meats, bacon, fish, apple, melon, tomato, carrot, and nut meats. Cheese, although an excellent bait for house mice, is not attractive usually to rats. Almost any food suitable for human consumption will appeal to the gluttonous appetite of the rat, so that there should be no lack of variety.

Where to Set Snap-Traps

Rats rely on concealment for protection and avoid open spaces as much as possible. The best place to set traps, therefore, is close to walls, behind objects, in dark corners, or in any place where a rat would run for concealment. Traps should be set in such a manner that the rat following its natural course will pass directly over the trigger. For example, in setting along a wall the trap should extend from the wall at right angles, the trigger end close against it. Boards may be leaned lengthwise against walls to form natural runways for rats and good places to set traps.

Cage Traps

Cage traps are in general less efficient than snap traps, although they are capable of catching a large number of rats at one time. Most of them are self setting. There are a large number of cage traps and similar devices, most of which have some merit but no outstanding features that would warrant describing them here. Cage traps of any kind are made more attractive by covering them with old burlap bags, straw, or other handy material. They should be set in places where rats are accustomed to feed and should be baited with a variety of baits as suggested for snap traps.

General Trapping Instructions

An abundance of accessible food for rats makes trapping much more difficult. Before starting a trapping campaign put all food out of reach and stop the sources of supply. Plenty of traps should be used. Trying to catch a hundred rats with half a dozen traps will make those not caught suspicious and dishearten the trapper long before the job is half done. A dozen or more traps for a heavily infested dwelling and from 50 to 100 or more for farms and large buildings are not too many. It is important that a sufficient number be used to make the campaign short and decisive. Traps should be kept in good working condition and carefully examined before setting to insure their instant operation.

Use of Viruses

Rat viruses on the American market contain living organisms which when ingested by rats is said to cause a disease that is followed by great mortality. In extensive experiments with rats conducted by bacteriologists of the Department of Agriculture, however, even the most virulent cultures failed to produce a high percentage of deaths, while the majority of the viruses tested were practically ineffective. Also the disease produced was found not to be contagious, except when one rat ate another. Thus there is little probability of the disease spreading to an appreciable extent.

Deterrents

Rats appear to have a marked aversion for certain odors and seem to consistently avoid them. This allows their use as rat deterrents, and this method has been found useful under certain conditions. In seed warehouses and similar structures where sacked grain is stored, it has been found that a liberal application of flake naphthalene scattered on the floor about the stacked grain and over the bags is objectionable to rats and will keep them away, and it does not damage the seed. Because of its odor the use of naphthalene is not recommended in places where food and foodstuffs are stored, unless the nature of the material is such that it can be thoroughly deodorized by airing before use.

There are many other compounds said to be objectionable to rats, chiefly creosote, carbolic acid, and other coal and wood tar derivatives, kerosene, and oils of peppermint and wintergreen.

Compounds that rats avoid may often be used where an odorous preparation would be objectionable. Among these are powdered sulphur, lime, lye, and copperas. Sulphur particularly has been used successfully in protecting stored grains, such as corn, from the ravages of rats.

Deterrents may be used to advantage to prevent reoccupation of old burrows and other rat habitations after a successful campaign of destruction.

(Continued on page 19)

Deodorants

There is always the possibility that a rat will die in an inaccessible place, where its body will decay and cause obnoxious odors, particularly if near steam pipes or other warm places. In such cases the nuisance can be abated to some extent by the use of a deodorant that will absorb, neutralize, or destroy the offensive odors of putrefaction.

Of a number of deodorizing compounds tested in the laboratory, lysol was found most effective in counteracting putrefactive odors. If possible, a small hole should be bored through the walls in the vicinity of the supposed point of origin and several tablespoonfuls of lysol inserted, after which the hole may be plugged. Pine-wood oil or perfume may also be added if desired. Zinc chloride may be used in the same manner.

One-half dram of lead nitrate mixed in one pint of boiling water and then added to a pail of cold water in which 2 drams of salt are dissolved make a good deodorant solution. A large cloth should be saturated in the solution and hung in the room in which the odor is present.

Summary

In summarizing: Rat-proof all new buildings. Close all openings through which rats can gain entrance. Remove all shelter for rats. Promptly dispose of all garbage, trash, and other waste on which rats can feed. As stated before, the most important factors on the general control of the rat pest are modern methods of construction and sanitation. Such regulations are urgently needed if the rat is to be shut out of every new structure and ultimately built out of the country and possibly out of existence.

Bulletins on the control of rats and mice can be obtained from U. S. Department of Agriculture, State Department of Agriculture, and your county agricultural commissioner.

FRANK BRIANS,
Agricultural Inspector,
Santa Maria,
Santa Barbara County, Calif.

Insects As Aviators

Beetles as well as butterflies may be carried many miles by wind currents. This is shown by the finding last year of European spruce sawflies in widely separated localities in New England and northern New York, evidently a drift from the Gaspe Peninsula; by the discovery of enormous numbers of tiny apple leaf-curling midges in New England orchards 6 to 26 miles from where the insect was known to occur previously; by the sudden appearance in 1929 of the Mexican bean beetle over a large area in southwestern New England; and by the occurrence of the European elm bark beetle and the Dutch elm disease in most of the area within about fifty miles of New York City, and in addition a 30-mile extension eastward in southern Connecticut. Tag-bearing toy balloons, over 4,900 in number, were released last summer to ascertain wind drift in southeastern New England in particular. The direction of the drift and the distances covered from the several localities show a striking agreement with the distribution of diseased trees and support the belief that wind currents are important agencies in transporting the bark beetle and the disease it carries to unaffected areas.—Crop Protection Institute.

Light on Insect Pests

A California scientist has reported to the American Association for the Advancement of Science successful tests of his discovery that insects are attracted by specific colors, so that lights of different colors can be used to lure different kinds of bugs to their deaths in electrical traps. Thus the grape leaf hopper pays no attention to red or green lights, but flies directly into a pale blue light. By putting a colored light inside a cage surrounded by electrically charged wires, as many as 5,000 of the insects were killed in a single night. One such trap proved enough to protect an acre of vineyard.

This discovery holds great economic possibilities for the farmer. It may prove the winning weapon in the endless war between man and the insect world. Insect pests cost the American farmer more than two billion dollars a year, it is estimated.

All that needs to be done, it would seem, to protect corn-fields, cotton-fields, orchards, citrus groves, and other crops from the ravages of insects is to find out just what colored lights the corn-borers, grasshoppers, chinchbugs, boll-weevils, and the thousands of other crop-destroyers prefer, and light up the landscape accordingly.

Even if it does not kill the bugs, the light effect should be decorative.

Some men who really know very little have the knack of appearing very profound.

The word "competitor" is not a synonym for "enemy." Too many in the industry work themselves up to the pitch of trying to make these words synonymous.

15 Years
Successful Experience

Chemicals for Protection against

MOLD (on walls or textiles)
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one pound of our KATATEX for Moths makes 10 gallons of solution

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Lethane 384

The Synthetic Insecticide Concentrate

FAST ACTION
HIGH KILL
FEWER APPLICATIONS
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THESE are the properties of insecticides based on Lethane 384. Pest Control operators are finding that this concentrate makes easy their difficult control problems. Use Lethane 384 in your control work on bedbugs, moths, roaches and other difficultly controlled insects. Exterminating sprays based on Lethane 384 increase the value of your service to your customers.

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Tentative Plan for Program of Pacific Pest Control Operators' Conference

March 28-29-30-31, 1938

Stanford University, Palo Alto, California

To Pest Control Operators and Entomologists:

THE CALIFORNIA Pest Control Association, Inc., announces the first Pacific Coast Pest Control Operators' Conference, under the personal direction and guidance of Dr. R. W. Doane, Professor Emeritus of Stanford University, Palo Alto, California, and cooperatng with Professor J. J. Davis, Purdue University, Lafayette, Indiana.

The Pacific Coast Conference is open to all Pest Control Operators and Entomologists who desire to attend. The committee has chosen the Stanford University at Palo Alto, California, as the place of the first conference because (1) of the fine cooperative spirit that has been extended to us in the promotion of this conference; (2) its efficient equipment available for our use, and (3) the central and geographical location to all Pacific Coast Pest Control Operators and Entomologists. You are cordially invited to attend.

NAME: Pacific Coast Pest Control Operators' Conference.

SPONSOR: The California Pest Control Association, Inc.

PURPOSE: For the educational advancement of the personnel of the Pest Control Industry.

PLACE: Stanford University, Palo Alto, California.

PROGRAM: The program of the conference is now being formulated and will be mailed to you soon.

TIME: March 28, 29, 30 and 31, 1938.

FEES AND EXPENSES: In order to defray the expenses of this conference, $10.00 will be the registration fee which will include all publications, literature, programs, etc., and the banquet on the night of March 31, 1938. Reasonable living accommodations can be arranged in the beautiful city of Palo Alto, California.

REGISTRATION: In order to make the proper and necessary arrangements at the Stanford University for this conference, the committee **must know by March 20, 1938,** the number of persons who are going to attend this conference. Therefore, may we request that you send your registration fees of $10.00 to the registrar, Mr. Arnold Alderman, 1326 Haley Street, Santa Barbara, California.

Inquiries for further information should be mailed to the general chairman, Mr. J. M. Miller, 1631 North La Brea Avenue, Hollywood, California.

Monday, March 28, 1938

9:00-10:00—Registration, Jordan Hall, Room No. 433.

10:00-12:00—Assembly, Jordan Hall, Room No. 430.

(a) Introduction—Chairman, J. M. Miller, Hollywood, Calif.

(b) A Word of Welcome — Prof. R. W. Doane, Professor Emeritus of Stanford University, Palo Alto, Calif.

(c) "Economic Importance of Insects"—Professor J. J. Davis, Department of Entomology, Purdue University, Lafayette, Ind.

1:30-4.30—Assembly, Jordan Hall, Room 430. Chairman: G. A. Rader, B.A., Berkeley, Calif.

(a) "The Life History and Habits of Insects as They Relate to Insect Control"—Professor Carl D. Duncan, Department of Entomology, San Jose State College, California.

(b) "The Termite Problem"—Professor William B. Herms, Professor of Parasitology and Entomology, Agricultural Experimental Station, University of California at Berkeley, Calif.

(c) "Inspection of Biological Laboratories of the Stanford University"—Dr. C. V. Taylor, Stanford University, Palo Alto, Calif.

7:00-9:00—Assembly, Jordan Hall, Room No. 433. Chairman: Mr. V. H. Montgomery, San Francisco, Calif.

(a) "The Four Fundamentals of Better Business"—Mr. Frank H. Beckmann of the firm of Beckmann, Hollister & Co., Business Engineers, San Francisco, Calif.

(b) Open Forum and Get-Acquainted Social.

Tuesday, March 29, 1938

9:00-12:00—Assembly, Jordan Hall, Room No. 433. Chairman: Mr. W. B. Tanner, Los Angeles, Calif.

(a) "Structures of Insects as They Relate to Insect Identification and Insect Control"—Professor Carl D. Duncan, Department of Entomology, San Jose State College, California.

(Continued on page 21)

(b) "Principals of Insect Control"—Professor J. J. Davis, Department of Entomology, Purdue University, Lafayette, Ind.

12:00-12:15—Picture to be taken of conference members. (Location to be announced at conference.)

1:30-4:30—Assembly, Jordan Hall, Room No. 430.

(a) "Illustrated Discussion on Insects Attacking Ornamental and Flowering Shrubs"—Professor E. O. Essig, Professor of Entomology, Agricultural Experimental Station, University of California, Berkeley, Calif.

(b) Explanation of Chemical Terms and Some Fundamentals of Chemistry.

(c) Chemicals Used in Pest Control.

(d) Effects of Pest Control Chemicals on (1) Humans; (2) Insects; (3) Pests.—(Speaker to be chosen.)

7:00-9:00—Assembly, Jordan Hall, Room No. 433. Chairman: Mr. G. R. Lovejoy, Los Angeles, Calif.

(a) Open Forum Discussion of a Pest Control Business.

Wednesday, March 30, 1938

9:00-12:00—Assembly, Jordan Hall, Room No. 433. Chairman: Mr. Elmer A. Roberts, Burlingame, Calif.

(a) "Identification of Immature and Adult Forms of Insect Life"—Professor J. J. Davis, Department of Entomology, Purdue University, Indiana.

(b) "Injurious Beetles Which the Pest Control Operators Are Likely to Find in the Course of Their Investigations of Buildings"—Dr. Edwin C. Van Dyke, Division of Entomology, University of California, Berkeley, Calif.

1:30-4:30—Assembly, Jordan Hall, Room 433. Chairman: Mr. Ernest M. Mills, San Francisco, Calif.

(a) History of Commercial Pest Control—Mr. L. R. Alderman, Pasadena, Calif.

(b) "Relation of Insect and Rodent Control to Health"—(Speaker from State Department of Health.)

(c) Clinic: (1) Rat and Mice Control. (2) Rat Proofing. Leader: Mr. O. W. Dickens, Los Angeles, Calif.

7:00-9:00—Assembly, Jordan Hall, Room No. 433.

(a) The State Structural Pest Control Law—Mr. Wilbur F. Smith, President of the State Structural Pest Control Board, and Glen V. Slater, Registrar of the State Structural Pest Control Board.

(b) Open Forum Discussion of Legislation.

Thursday, March 31, 1938

9:00-12:00—Assembly, Jordan Hall, Room No. 433. Chairman: Charles W. Mollard.

(a) "Insect Quarantine and State Pest Control"—Mr. D. B. Mackie, Department of Agriculture, State of California.

(b) (Subject and Speaker to be chosen.)

1:30-4:30—Assembly, Jordan Hall, Room No. 433. Chairman: Lee W. Christensen, San Diego, Calif.

(a) "The Importance of Wood Rots and Their Control"—Professor Emmanuel Fritz, Department of Forestry, College of Agriculture, University of California.

(b) Clinic: Termites and Woodborers.—Mr. W. B. Tanner, Los Angeles, Calif.

7:00-9:30—Banquet. (Speakers and place to be announced later.)

Associated Exterminators and Fumigators of New York

It is now definite that Neely Turner will be the speaker on Termites at our March 8th meeting and the other speaker is Arthur B. Buckeridge, Executive Vice President Credit Bureau of New York City.

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PYRETHRUM
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Industrial Size: 8-ounce pour spout can. 10 Pounds, $4.00; 25 Pounds, $7.00; 50 Pounds, $12.00; 100 Pounds, $22.00. All Delivered.

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"FACTS"

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(1) It will exterminate all Silverfish in building completely and properly treated within 40 days; ONE TREATMENT will protect against reinfestation for THREE YEARS.

(2) Harmless to human beings and animals, simple to apply, no tearing up or marring woodwork, yet placed away from any chance of removal. No inconvenience to tenants whatever.

(3) One pound will treat completely — three 2-room apartments, two 3-room apartments, or a basement room 20x20.

(4) It has fulfilled every claim made for it, under the worst conditions known. Write for testimonials.

(5) "NEW LOW PRICES"— $1.00 per pound, f.o.b. Seattle, Washington. Minimum amount 10 pounds. Shipped express, second class.

(6) *Don't envy the exterminator who can guarantee the above performance, be one!!!*

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Tree Surgeons

THE Pest Control industry, as we have more or less generally viewed it through articles that are published in The Log, has confined itself to the accepted household pests. Of more recent issues we have printed material concerned with the agricultural field and feel that more and more we should submit articles of interest in this field especially in view of the fact that customers frequently ask questions about certain plant and flower and vegetable or garden insects. In fact, there are pest control operators today who sell products to this field.

Recently there have been calls made to pest control operators relative to insects that are entering homes by way of trees. It probably is not generally known that there is a large and competent group of tree surgeons with whom the firms of the pest control industry might well become acquainted and call for assistance. The recent issue of the Entoma gives a complete list of competent tree surgeons. The Entoma is published by the Eastern Branch of the American Association of Economic Entomologists and this book might be had by sending 75c to Prof. C. C. Hamilton at Rutgers University, New Brunswick, N. J. Incidentally this book also contains a list of pest control operators.

The Bay Counties Tree Surgeons and Pest Control Operators Association has adopted what is termed "The Tree Surgeon's Creed," outlining the principles of practice. We feel that the pest control industry might enjoy reading this creed:

THE TREE SURGEON'S CREED AND PRINCIPLES OF PRACTICE

"We will keep the thought before us that trees are the friends of man; that from the beginning they have furnished him with food, shelter, clothing, and weapons; that in all ways they make the world more habitable and beautiful for all creatures.

We will do all in our power to subdue insect pests and diseases of trees, and to obviate unfavorable conditions in their environments.

We will endeavor to impart a just appreciation and understanding of trees, as living things, to those with whom we come in contact, but we will divulge our knowledge of tree lore only to those fit and ready to receive it, and then only in so far as they are prepared.

We will not treat a tree for pay if we are convinced that the tree is dying and we cannot save it. Neither will we leave a tree or branch that is a menace to life or property without disclosing the danger to the parties concerned, and suggesting the means that would render it safe.

We will not knowingly use injurious or useless materials or methods in filling, feeding, treating, or spraying trees or shrubbery, nor allow it to be done by others under our charge.

We will perform all services pertaining to our profession to the best of our ability at the time we deem most suitable to gain the best results.

Should we discover a tree with an incurable disease or an uncontrollable insect pest that may threaten surrounding trees, we will draw the attention of the proper persons to the condition so that the menace may be promptly checked. Likewise, if we observe the start of an epidemic of pests or disease which we may check by private means, we will do so.

We will remember that those who employ us possess the virtue of respect for the things of nature and should be appreciated for that trait; and, further, that they may be as fond of the more delicate growth beneath the trees as they are of the trees themselves, so we will use care that our treatment does such growth no avoidable harm.

We will do whatever we may, legally, to prevent the ignorant or wanton destruction or mutilation of trees.

We will disclose no means of surreptitiously destroying trees or shrubbery.

We will endeavor at all times to so conduct ourselves that our crafts shall merit the highest respect and esteem of all persons.

We will consistently strive to improve our craft.

Further, our fellow-workers and competitors, if they be true craftsmen, have like problems and strivings, and we will accord them the same consideration that we expect ourselves."

There is likewise available an interesting book that sells for $4.00 or in special binding for $5.00 entitled "Practical Tree Surgery" by Millard F. Blair. This book is said to be indispensible for park superintendents, farm advisers, agricultural commissioners, spray operators and tree surgeons. Those desiring this book send your orders to The Log.

Local Organization News

Professional Exterminators Association

New York City

The monthly meeting was held February 24th at Town Hall, New York, with Milford Oachs presiding. Members discussed the present union agreement together with changes that were felt desirable. A committee was appointed to investigate savings to be accomplished through their own cooperative buying.

Associated Exterminators and Fumigators of New York

The next meeting of the Associated Exterminators and Fumigators of New York will be held at the headquarters of the Association, 7 East 44th Street, New York City, March 8th, at 7 P. M. Again an open invitation has been extended to the firms of New York City to attend the meeting because of the nature of the program that is being arranged. Any firms who are visiting in New York City at the time are invited to attend.

With the termite season fast approaching it is desirable that there be a speaker on this subject and it is expected that Neely Turner, Entomologist, Connecticut Agricultural Experiment Station, will be the speaker and conduct an open forum after his addres. Another speaker will talk on the subject, "How to Handle Collections." William O. Buettner, president of the Association, will preside and also report on the recent visit he made throughout the country.

The Association has followed through as a result of its recent meeting by having active committees engaged in the suggestions made by A. H. Hetfield of Sheldon, Morse, Hutchins and Easton, who discussed publicity and advertising. R. J. Watterson, Certified Public Accountant, took up the subject of Cost Analysis and forms are in the process of being filled out so that a comprehensive report can be made toward the end of better stabilization of prices.

The World Wide Exterminating Co. of Brooklyn was admitted to membership.

Chicago Pest Control Operators

On February 7, 26 Chicago Pest Control Operators met at the Medinah Club in honor of our National Secretary, Wm. O. Buettner.

One very interesting and educational moving picture, rat film and several mosquito films were shown through the courtesy of Dr. Hartnack.

Our National Secretary, Mr. Buettner, discussed his interesting trip and the problems confronting the industry.

A deep interest was shown and all felt the importance of a better understanding and cooperation for the good of all concerned.

St. Louis Pest Control Association

Secretary James C. Walker of the St. Louis Pest Control Association reports an interesting meeting held on February 8th. The discussion centered mainly around classified telephone directory advertising. A committee is to confer with the officials of the telephone company with a view of making for a better understanding on this matter.

The next meeting will be held Tuesday, March 8th, and thereafter on the second Tuesday of each month. After the March meeting the initiation fee is to be $10.00.

Kansas City P. C. O.

A special dinner meeting was held January 31 at the Hotel Pickwick by the P. C. O.'s of Kansas City, Mo., in honor of our National Secretary, William O. Buettner. The following were present: Frank Gates, of Gates Exterminating Co., J. Regan of Regan Exterminating Co., F. R. Andrews and A. James of Fumigation Service Co., A. L. Linck and R. J. Holman of Paramount Fumigation Co., Chas. Falkenberg of Terminix Co. of Kansas City, F. C. Vasicek of Rockwell Exterminating Co., D. E. Reck of K. C. Pest Control Service, T. C. Raley of Getz Exterminators, Inc., O. S. Schaffer of Per-mo Moth Proof Co., J. Birkhead of Better Business Bureau, W. O. Buettner, Secretary of the National Association, and Al Cossetta, Exterminators Log.

Mr. Buettner was given some time on KMBC, one of the leading radio stations in this territory. A very interesting interview was arranged and those who listened in to our secretary's remarks were impressed with the importance of pest control service.

In the meeting Mr. Buettner stressed the extreme importance of proper advertising. He brought out the advantages of better publicity and showed how better results could be obtained with more effective advertising.

(Continued on page 23)

Much emphasis was placed on termite control work. It was also pointed out that agreements should be made that would not confuse the public in regard to service to be rendered.

It was also urged that efforts be increased to cause the telephone company to permit just one classification for pest control operators with sub-listings pointing back to the main classification.

Mr. Birkhead of the Better Business Bureau stated that he was more than willing to cooperate with the local group in their problems.

All in all it was indeed a delightful and helpful meeting. We appreciated having our National Secretary with us and his visit with us has been productive of a better understanding among Kansas City's P. C. O.'s.

California Pest Control Association

On February 4, Division No. 2 of the California Pest Control Association, Inc., held their regular monthly meeting. The discussion on how to improve cooperation and understanding among the members was very much appreciated. Enthusiasm ran high and a very fine spirit of cooperation was shown throughout the meeting.

The following officers were elected:

President—William Hogan of Pasadena.

Vice-President—Wallace Tanner of Los Angeles.

Secretary—J. M. Miller of Hollywood.

Treasurer—O. W. Dickens of Los Angeles.

The above mentioned officers and Harold Grundy of Long Beach comprise the directorate.

National Association Notices

Members are urged to call on each other, especially when traveling about the country. A permanent office is not required, but for those firms visiting New York City, it is urged that the secretary be called at either South 8-4116 or South 8-4120 and appointment will be arranged.

Communication No. 115: Membership Service letter sent February 23rd and included was ten pages of information on Termites, a report based on research of George L. Hockenyos.

Communication No. 116: Membership Service letter sent February 28th and included a comprehensive summary on Chemical and Physical Properties and some substances used to control rodents as prepared by E. F. Sennewald.

Communications No. 117 and No. 118: These will be sent to the membership during March. Members are asked to read carefully Membership Service Letter No. 113 with which was included the membership roster. If there are any errors, please notify the secretary in that another supplementary membership list will be included with one of the above service letters.

Communications 5-F: Usual business of the Association for attention of the Board of Directors sent March 5th.

Trip of the Secretary: The summary report could not be prepared in time for publication in the March issue but will be submitted for publication in the April issue of The Log.

Dues: The Board of Directors has authorized the discontinuance of sending membership service letters to those in arrears. There are not a great number whose dues are unpaid, but as in the past, the Association feels justified in keeping on its roster only those who have paid dues. The Association sees no sense in carrying dead wood.

Membership: Many firms continue to make inquiry about joining the Association. The secretary will forward application for membership form to those who make request. Any firm desirous of giving co-operation in terms of making for a better industry and can meet the requirements of Association membership will be welcome. The dues are $10.00 per year with no pro rata amount for a portion of the year. The fiscal year runs from January 1st to December 31st.

Omaha, Nebr.—October 24-25-26: Plans are well under way for the big annual convention to be held at Hotel Fontenelle. Reserve the dates now.

New Seal: Many orders have been received and these are being filled as rapidly as money arrives at the office of secretary. The cost is $1.00 for one seal and 50 cents for each additional seal when ordered at the same time. We encourage the members to use the seal freely.

Monarch Powder Sprays

Used by Many Leading Exterminating Concerns Throughout the Country

Made in 3 Sizes

No. 40 Has 14 Ounce Capacity

No. 41 Has 9 Ounce Capacity

No. 42 Has 8 Ounce Capacity

Large Opening in Neck Affords Easy Filling

Screens Powder Perfectly

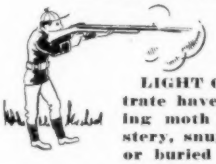
Made of High Grade Materials

Write for Catalog and Price List

THE VANT WOUD RUBBER CO.

JERSEY CITY, - - - - NEW JERSEY

FUMIGATION WITHOUT *PENETRATION* is like hunting with **BLANKS**



LIGHT GASES that don't penetrate haven't a chance of reaching moth deep in dense upholstery, snug in deep floor cracks or buried in thick woolly rugs.

NONE OF THESE retreats is safe from the penetrating fumes of LARVACIDE. It kills the worms, sterilizes the eggs. With LARVACIDE, neither has any more chance than that well-known snowball. Your fumigation with LARVACIDE will be a thorough job—well done.

SAFER TOO—You can't separate LARVACIDE from its unmistakable warning quality. Nobody can "stick around by mistake" to get into trouble. LARVACIDE'S powerful tear gas fumes send out in a hurry everyone not protected by a mask.

● RODENTS DIE without Creating a Nuisance. LARVACIDE drives them out into the open. Traces, lingering in burrows and other retreats, act as a repellent. No new tenants will soon replace the late (un)lamented. Write for new Rodent Control Booklet . . . and other literature on EFFECTIVE and SAFER Fumigation.

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What's New in the Pest Control—Personals

Brimstone Brevities for January, 1938, issued by Freeport Sulphur Company, 122 East 42nd Street, New York, contains many interesting abstracts of papers dealing with sulphur compounds; also references to recent publications dealing with sulphur as an insecticide, fungicides, fumigants, soil requirements, the selenium problem and as it relates to animal parasite control.—Crop Protection Institute Circular.

A cartoon not so long ago showed a Chinaman holding a rat, broadly smiling preparatory to eating it, and wording that went with it was: "Dried rats are considered a delicacy in China. They are believed to restore falling hair and sell for 50 cents a pound."

Answer this one: A Washington, D. C. hotel had been serviced by a firm of the industry for nearly five years and yet the very first night that a WPA worker set traps, 19 rats were caught. It is one thing for the industry to condemn but still another when some of the firms apparently are not taking care of their jobs as intelligently as they should.

Here is a tricky line that Dr. Hugo Hartnack of Chicago, Ill., mentioned as a possibility for use in advertising or slogan: "Pests Take No Rest." We are somewhat inclined to agree when we consider that there are something like 700,000 various insects and pests classified today by the entomologists.

No one looked any younger than Frank L. Brown of Bloomington, Ill., who was celebrating his 70th birthday on the occasion of the meeting of the Chicago Pest Control operators recently when "Bill" Buettner was in town.

Mr. and Mrs. Bartlett W. Eldredge of Waltham, Mass., have made their annual pilgrimage to Quebec, Canada. It is said that there is a unique way of greeting the Eldredges as they arrive at Hotel Chateau Frontenac. Yes, Bart, we recall the story about that limping of yours at the Memphis Convention. Think that this is the eleventh straight year for this visit to Canada.

Mr. George Thorn, for many years the partner of George Lockhardt of Browns Insecticide Co. of New York City, died February 25th. His many friends in the pest control industry will long remember Mr. Thorn as one of those quiet unassuming men always being fair with everyone and enjoying the confidence of those with whom he did efficient work.

C. Norman Dold was reported having a pleasant visit with George L. Hockenyos at Springfield, Ill., and then continuing to St. Louis, Mo., to notice the progress of the new office of the Rose Exterminator Co. of which Gerald Clem is manager. Thos. C. Raley and C. Norman Dold also had an opportunity to visit as former presidents of the National Pest Control Association are bound to have plenty to reminisce..

Mr. and Mrs. William J. Stover of Detroit, Mich., arrived in New York City after a three weeks' stay at Hollywood, Fla., looking as brown as berries. "Bill" reports that M. R. VanAuken of J. J. Carroll & Co. and Arthur Goulet of Reliable Fumigation Service were also spending a pleasant vacation at Hollywood, Fla. These fumigation minded men of Detroit always seem to have time to take a trip during the winter months.

PEST CONTROL THEME SONG

Pest Control—Pest Control;
Call us and we'll be your friends.
When we come your trouble ends.
Pest Control—Pest Control;
Dust 'em—Spray 'em—Gas 'em—Bait 'em
Pest Control.

Thus ran the words of the song sung by Harlem Ives of Detroit and Bob Yeager of Cincinnati, at the Second Pest Control Operators Conference held at Purdue.

The New York Herald Tribune in its magazine section, this week, on February 6, published a fine article entitled "Unmentionables" that was written by Inis Weed Jones. Nice publicity for our industry and

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MOST
EFFECTIVE
RODENTICIDE

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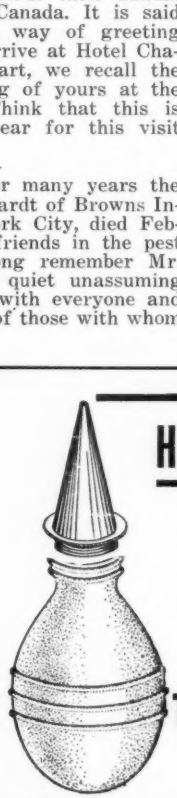

Houchin's "Dandy" Blower

Made of best quality red rubber. Fitted with brass screw top, polished brass or tin spout with screen to prevent clogging. Meets every exterminator's demand. Made in 2 Popular Sizes—8 - 10 Ounces.

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THOS. W. HOUCHIN CORP.
9-15 McPherson Place Jersey City
Mfgr. Insect Powder Guns
Established 1851

A NEW SYNTHETIC INSECTICIDE
KESSCOCIDE 95
ALPHA NAPHTHYL ISO-THIOCYANATE
ODORLESS NON-STAINING ECONOMICAL
INQUIRIES SOLICITED

KESSCO PRODUCTS

THE KESSLER CHEMICAL CORPORATION
DELAWARE AVE. & MIFFLIN ST. PHILADELPHIA, PA.

incidentally a few thoughts that others might use. There could have been other things said but in the main the article was a good one.

Thomas C. Raley of St. Louis has been a busy man lately. He is making his annual visit to his offices of the Getz Exterminators, Inc., in Oklahoma, Texas, Georgia and Louisiana.

Thomas C. Raley, William O. Buettner and Al Cossetta, motored to Omaha from Kansas City to visit with the Omaha group. It was typical of our energetic, ebullient Secretary that he fumed and stewed because an hour of daylight was wasted in motoring to Omaha.

The Pest Control Industry is much indebted to the National Association of Insecticide and Disinfectant Manufacturers for the splendid job being done relative to various attempts at legislation which have a direct and indirect bearing on the pest control industry. Pest Control Operators would do well to ask occasionally of the members of the National Association of Insecticide and Disinfectant Manufacturers if any cooperation might be given as to these laws that are constantly being proposed.

What is the Pretzel Bell at Indianapolis, Ind? Three musketeers are said to have been wrapped around this in some fashion or other and were prompted to send an SOS to Purdue in the wee hours of the morning. Someone please page Mesdames Arnott, McLeod and McKenna and insist on a full and complete report.

Write for These Booklets

Notice

Many letters are being received from P.C.O.s requesting the free literature that is being given by manufacturers.

May we call the attention of those who desire such literature to the necessity of writing your letters to the manufacturers, addressing them to The Log. Letters written to us with one listing of literature for several manufacturers will be returned unless separate letters are written for each piece of literature desired. Thank you.

ROACH CONTROL

Entomological survey well illustrated covering in detail 4 Domestic Species; How They Breed; 2 Kinds of Damage; Disease Carriers; How They Get In; Where They Hide; Guide to Control; Of Unusual Interest to Pest Control Operators.

FOR FREE COPY WRITE DOLGE, c/o The Log.

NEW SYNTHETIC INSECTICIDE

Report covers more than four years of intensive research. Giving details of physical properties, chemical properties, physiological properties; tables showing Percentage Kill of Houseflies in One Day; Experiments With Clothes Moth Larvae; The Relative Toxicity, Rapidity of Action, etc; Experiments With Clothes Moth Larvae; the Relative Toxicity of Several Chemicals; Experiments With Carpet Beetle Larvae; the Loss of Effectiveness in Treated Discs Aerated for Various Periods of Time; Experiments With Carpet Beetle Larvae; the Relative Toxicity of Several Chemicals; the Toxicity of Isothiocyanates, Thiocyanates and Rotenone to Goldfish; the Effects of Oral Administration to White Rats of Alpha Napthyl Isothiocyanate.

FREE TO PEST CONTROL OPERATORS IF YOU WILL WRITE KESSLER, c/o The Log.

SYNTHETIC ORGANIC CHEMICALS

60-Page Booklet in which is included data on Pentaphen (Para Tertiary Amyl Phenol), Specifications, Other Properties, Containers. Can be dissolved in alcohol and then diluted with water to slightly above cloud point. Such water-alcohol solutions may be used in the manufacture of germicides, insecticides and fumigants. 2, 4-Diamyl Phenol Formula, Molecular Weight, Specifications—Color, Specific Gravity at 30 degrees C. Solubility in 10% KOH, Distillation, Weight Per Gallon. Containers.

(Continued on Page 26)

A NON-POISONOUS RAT KILLER

15c PER POUND IN ONE-POUND TIN CANS

For Safety, Effectiveness and Economy
—USE

SUR-RID RAT KILL

Try It—It Saves Time and Money

SUR-RID Rat Killer is tested in our own laboratory on both wild and tame rats and we GUARANTEE the Killing Power.

SUR-RID Rat Killer contains meat, cereals, vegetables and just the right amount of a tested killing agent. It is especially appetizing to rats and mice as there is only an odor of fresh meat and vegetables and there is no raw odor of chemicals; four distinct lures, MEAT, FISH and CEREAL and CANTALOUPE, packed either assorted or of one kind to a case, which contain three dozen one-pound cans.

Due to the increase in the sale of this Rat Killer, we are reducing the price as follows:

	Per Dozen
Three Dozen Lots, labeled	$2.00
Gross Lots, labeled	1.90
Gross Lots, no label	1.80
The half-pound size, packed five dozen to a case	1.25

All Prices F. O. B. St. Louis
Also Packed Under Private Label

SUR-RID PRODUCTS COMPANY
Manufacturers
(FORMERLY REAL EXTERMININATING PRODUCTS CO.)
455 PAUL BROWN BLDG., ST. LOUIS, MO.

"The Proof of the Pudding"

Actual Experience

has proven that there IS a mothproof liquid that will protect any article treated against moth damage for life of fabric.

Thousands of satisfied users during the past five years prove the efficacy of PER-MO mothproof. PER-MO is easily applied in the home, without odor, fumes or any possible danger. It is non-combustible and cannot harm the most delicate fabrics.

One application mothproofs any treated article for life of fabric.

Pest Control Operators, rug cleaners and dry-cleaners are making large extra profits from PER-MO mothproofing service.

Write for full particulars.

INDUSTRIAL TESTING LABORATORY, INC.
Kansas City, Missouri

Per-Mo Mothproof Company
Gentlemen:

This is to certify that we have made tests and analyses of your Per-Mo Permanent Mothproofing and find as follows:

Per-Mo is colorless, odorless, non-inflammable liquid producing no stain on fabrics when properly applied.

The solution does not affect the color or tensile strength of the fabric when properly applied. Our analyses and washing tests show that dry cleaning does not remove Per-Mo at all, and repeated washings remove only a small portion. This indicates that the treated fabric will be moth-proofed for its full life by one treatment.

PER-MO MOTHPROOF CO.
2306 Olive Street, Dept. M KANSAS CITY, MO.

Dichloro Pentanes — Formula, Molecular Weight. Specifications. Other Properties. Containers. Have been tried as contact spray in grain elevators, soil fumigant and for the control of peach borers.

BOOKLET SENT FREE TO PEST CONTROL OPERATORS—WRITE SHARPLES, c/o The Log.

FLY AND MOSQUITO CONTROL

Entomological survey illustrated covering in detail Flies and Diseases; How Flies Breed; Illustrated Life Cycle of The House Fly; How to Kill Flies; Common Mosquitoes; How Mosquitoes Breed; War on Mosquitoes, etc. Should prove helpful to pest control operators.

FOR FREE COPY WRITE DOLGE, c/o The Log.

TERMITES AND FIRES

Interesting and informative booklet giving detailed information what to use and what not to use to kill wood destroying termites. Illustrated. Also discusses kinds of treatment; when and how to make timbers termite proof; painting after treatment and others matters of interest to property owners and termite control operators.

BOOKLET MAILED FREE TO OPERATORS. Write C. A. Wood, c/o The Log.

DERRIS

20-Page Booklet covering Foreword on Insecticide; Development of Derris Root as an Insecticide; Rotenone, the Principal Constituent; Brief Chemistry of Rotenone; Is Derris Poisonous to Man or Animals; Does Derris Deteriorate Exposed to Light and Air; Assay Method for Rotenone; Powdered Derris Root; Powdered Cube Root; Insect Control Chart; Application of Derris Today; Pea Aphis Control; Rotenone Added to Pyrethrum Sprays; Derris in Livestock Sprays; Derris in Flea and Lice Powders; the Labeling of Insecticides. Of interest to every pest control operator.

BOOKLET FREE ON REQUEST. Write Penick, c/o The Log.

PUBLIC ENEMY NO. 1 AND WHAT TO DO ABOUT HIM

Is the title of an interesting booklet, on the subject of destroying rats and mice without creating a nuisance. Contains some enlightening facts about rats; to point out what a serious menace they are—to health and property; to make clear to you that Brother Rat and his cousin Harold Mouse are expensive, as well as loathsome guests—and to show what can be done to crack down effectively on this public enemy.

COPIES AVAILABLE TO PEST CONTROL OPERATORS. Write Innis, c/o The Log.

Truth crushed to earth will rise again.

The public can be made pest control conscious if we show what should be done.

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(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

ENTOMOLOGIST, receiving A. B. this year wants salaried research position (not sales) in a company manufacturing insecticides. R. W. Goins, Mora, La.

SAFEGUARD with the new patented Twin Filter Respirator and Gas-Tight Goggle. Write for Bulletin. General Scientific Equipment Co., 2620 N. 23rd St., Philadelphia, Pa.

FOR SALE: Dry Powder Mixer, Filter Press, Mixing Tanks, Kettle, Para Block Press. Reasonable. Exterminators Log, Dept. A.

CUTS of rats, roaches, moths, bedbugs, ants, flies, etc. Exterminators Log, Cut Dept.

TIMBO POWDER

4% - 5% ROTENONE

DIRECT FROM PRODUCER IN BRAZIL

AT FACTORY PRICES

ANALYSIS

Rotenone (Minimum)	5%
Total Ether Extractives (Minimum)	20%
Moisture (Maximum)	10%
200 Mesh	90%

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IRVING HERMAN, INC.

401 Broadway, New York City

BARBASCO ROOT

For the best roots yielding a high percentage of ROTENONE, guaranteed not less than 5%, demand:

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Shippers,
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Sole Selling Agents in the U. S. A. and Canada.

NO SPILLING AND SPLASHING!

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"SAFETY" CARBOY DRAINER

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VIZ ROACH POWDER

AT 12c PER POUND

There Must Be a Reason

Sole Manufacturers and Distributors

CONNECTICUT PRODUCTS, INC.

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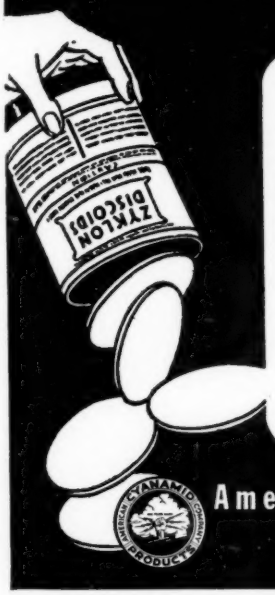
BETTER KILLS BETTER JOBS BIGGER PROFITS



For Fumigating Use ZYKLON DISCOIDS

No more guesswork. Do better jobs with this handy packaged fumigant. ZYKLON DISCOIDS are ready for instant use. Open the can and scatter the discs into rooms to be fumigated. No corrosive liquids and no dangerous residue. DISCOIDS give off a powerful gas that penetrates into every crack and crevice—kills insects wherever they may be. Send for "Zyklon Discoids Fumigation Manual"—FREE.

For Rat Control Use CYANOGAS

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American Cyanamid & Chemical Corporation
Insecticide Department
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More Profits for Your Termite Department using the TOX-EOL SYSTEM

Economical First Cost! ***Less Chance for Come-Backs!*** ***Better Satisfied Customers!***

WARRANTY BOND AVAILABLE

"TOX-EOL" is a combination of oils and highly toxic chemicals proved by years of official tests. It is effective both as a soil treatment and a wood preservative—THE TOX-EOL SYSTEM is a combination of both.

Write for Detailed Information and Laboratory Tests. Your Territory May Be Open.

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1. **Practically odorless and entirely stainless; inactive to paint.**
2. **Not dangerously injurious to work with.**
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4. **Exceeds by 50% standard lumber specifications for a self-impregnating type of preservative.**
5. **Effects an amazing penetration in all sap woods.**
6. **Deposits a lasting, insoluble, heat proof, highly toxic chemical in the treated wood protecting it against all wood eating insects and fungus.**
7. **All properties easily demonstrated, making an effective sales presentation.**
8. **Used by some of the largest termite contractors and on some of the largest jobs in the south.**
9. **Chemical available in concentrated oil solution making freight a minor item.**

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518 Pages—Illustrated with Photographs and Drawings

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Sanitary Entomology

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Assisted by Ten Expert Entomologists

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Departing from the usual manner of textbooks, this volume attempts to present the information needed by pathologists in the study of disease transmission; it approaches the control of insects from the standpoint of the sanitarian, the veterinarian, and even of the business man or private householder; it puts the information in the most convenient form for use.

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70% Discount on This Book

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Imms Recent Advances in Entomology

As the title implies, is a book much enlarged, with many new illustrations, new facts of the past few years, with information of the advances along many paths of inquiry. It contains 94 illustrations and over 400 pages.

Contents in Brief: Some aspects of Morphology; Metamorphosis; Paleontology; Sense Organs and Reflex Behavior; Fundamental Aspects of Coloration; Some Aspects of Ecology; Practical Application of Ecology; Parasitism; Biological Control.

PRICE, $5.00

Our Enemy . . . The Termite

By THOMAS E. SNYDER

Senior Entomologist, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

A book full of valuable information every member that deals with termite control should have.

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Effective Extermination Requires . . .
A Knowledge of Insect Life

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With the aid of the 144 pages of lucid descriptions and 1228 illustrations in this book, all of the important North American insects can be readily identified. The characteristics, habits, and life histories of insects are carefully related in detail. Both common and scientific names are given. The economic importance of each insect is considered and the ravages of the harmful ones are described.

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This book, with its 140 pages and more than 250 careful drawings, is a guide for beginners as well as a valuable reference book for experienced entomologists. It gives full directions for collecting and mounting insects with many suggestions as to where and how to look for them. *Illustrated keys make identifications of all the important families easy.*

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A very valuable book for every pest control operator at a price that will enable him to provide one for interested employees.

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—an indexed reference book produced by the University of California Termites Investigation Committee of engineers, scientists, and business men in six years' collaboration.

—contains the latest researches in facts on termites, the latest practical methods for exterminators, builders, and architects.

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